OPTIMUM®
MASCHINEN - GERMANY

Operating manual

Version 1.3.2

Geared drill

OPTi drill®
B 40GSM

Part no. 3034400

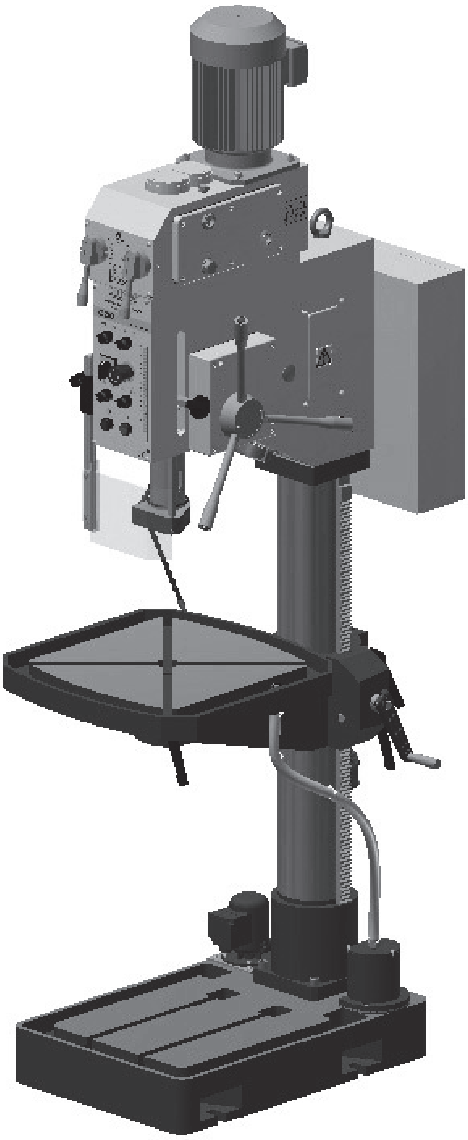


Table of contents

1 Safety

1.1 Rating plate.....5
1.2 Safety instructions (warning notes).....6
  1.2.1 Classification of hazards.....6
  1.2.2 Other pictograms.....6
1.3 Intended use.....7
1.4 Reasonably foreseeable misuses.....7
  1.4.1 Avoiding misuses.....8
1.5 Possible dangers caused by the geared drill.....8
1.6 Qualification of personnel.....9
  1.6.1 Target group.....9
  1.6.2 Authorized persons.....10
1.7 Operators positions.....11
1.8 Safety measures during operation.....11
1.9 Safety devices.....11
  1.9.1 EMERGENCY-STOP push button.....12
  1.9.2 Main switch.....12
  1.9.3 Drilling table.....13
  1.9.4 Drill chuck protection.....13
  1.9.5 Prohibition, warning and mandatory signs.....13
1.10 Safety check.....13
1.11 Personal protective equipment.....14
1.12 Safety during operation.....15
1.13 Safety during maintenance.....15
  1.13.1 Disconnecting and securing the geared drill.....15
  1.13.2 Using lifting equipment.....15
  1.13.3 Mechanical maintenance work.....16
1.14 Accident report.....16
1.15 Electrical system.....16
1.16 Inspection deadlines.....16

2 Technical data

2.1 Electrical connection.....17
2.2 Drilling capacity.....17
2.3 Spindle seat.....17
2.4 Drilling table.....17
2.5 Working area.....17
2.6 Speeds.....17
2.11 Emissions.....18
2.7 Floor loading.....18
2.8 Environmental conditions.....18
2.9 Operating material.....18
2.10 Coolant equipment.....18
2.12 Dimensions B40GSM.....19

3 Delivery, interdepartmental transport, assembly and commissioning

3.1 Notes on transport, installation, commissioning.....20
  3.1.1 General risks during internal transport.....20
3.2 Unpacking the machine.....21
3.3 Scope of delivery.....21
3.4 Load attachment points.....21
3.5 Set-up and assembly.....21
  3.5.1 Assembly.....21
  3.5.2 Installation site requirements.....21
  3.5.3 Load attachment point on unpacked machine.....22
3.6 Installation.....22
  3.6.1 Fixing.....22
  3.6.2 Assembly drawing.....23
3.7 Cleaning of the machine.....23
  3.7.1 Lubrication.....24
  3.7.2 Electrical connection.....24
3.8 First commissioning.....24
3.9 Coolant pump.....25
3.10 Checks.....25
3.11 Warming up the machine.....25

4 Handling

4.1 Control and indicating elements.....26
4.2 Safety.....27

4.2.1 Control panel 27
4.3 Drill depth stop 29
4.4 Spindle sleeve feed 29
4.4.1 Manual spindle sleeve feed 30
4.4.2 Automatic spindle sleeve feed 30
4.5 Tool holder 30
4.5.1 Unfitting the drill chuck 30
4.5.2 Fitting the drill chuck 31
4.6 Cooling 32
4.7 Working with the machine 33
4.7.1 Preparation 33
4.7.2 During work 33

5 Determining the cutting speed and the speed

5.1 Table cutting speeds / infeed 34
5.2 Speed table 34
5.2.1 Example for calculating the required speed on your drilling machine 36

6 Maintenance

6.1 Safety 38
6.1.1 Preparation 38
6.1.2 Restarting 39
6.2 Inspection and maintenance 39
6.3 Repair 42
6.3.1 Customer service technician 42
6.4 Cooling lubricants and tanks 43
6.4.1 Inspection plan for water-mixed cooling lubricants 44

7 Ersatzteile - Spare parts

7.1 Ersatzteilbestellung - Ordering spare parts 45
7.2 Hotline Ersatzteile - Spare parts Hotline 45
7.3 Service Hotline 45
7.4 Ersatzteilzeichnungen - Spare part drawings 46
7.5 Schaltplan - Wiring diagram 1 - 2 64
7.6 Schaltplan - Wiring diagram 2 - 2 65

8 Malfunctions

9 Appendix

9.1 Copyright 71
9.2 Terminology/Glossary 71
9.3 Change information operating manual 71
9.4 Liability claims for defects / warranty 72
9.5 Storage 73
9.6 Note regarding disposal / options to reuse: 73
9.6.1 Decommissioning 74
9.6.2 Disposal of the packaging of new devices 74
9.6.3 Disposing of the old device 74
9.6.4 Disposal of electrical and electronic components 74
9.6.5 Disposal of lubricants and coolants 75
9.7 Disposal via municipal collection 75
9.8 Product follow-up 75

Preface

Dear customer,

Thank you very much for purchasing a product made by OPTIMUM.

OPTIMUM metal working machines offer a maximum of quality, technically optimum solutions and convince by an outstanding price performance ratio. Continuous enhancements and product innovations guarantee state-of-the-art products and safety at any time.

Before commissioning the machine please thoroughly read these operating instructions and get familiar with the machine. Please also make sure that all persons operating the machine have read and understood the operating instructions beforehand.
Keep these operating instructions in a safe place nearby the machine.

Information

The operating instructions include indications for safety-relevant and proper installation, operation and maintenance of the machine. The continuous observance of all notes included in this manual guarantee the safety of persons and of the machine.

The manual determines the intended use of the machine and includes all necessary information for its economic operation as well as its long service life.

In the paragraph "Maintenance" all maintenance works and functional tests are described which the operator must perform in regular intervals.

The illustration and information included in the present manual can possibly deviate from the current state of construction of your machine. Being the manufacturer we are continuously seeking for improvements and renewal of the products. Therefore, changes might be performed without prior notice. The illustrations of the machine may be different from the illustrations in these instructions with regard to a few details. However, this does not have any influence on the operability of the machine.
Therefore, no claims may be derived from the indications and descriptions. Changes and errors are reserved!

Your suggestion with regard to these operating instructions are an important contribution to optimising our work which we offer to our customers. For any questions or suggestions for improvement, please do not hesitate to contact our service department.

If you have any further questions after reading these operating instructions and you are not able to solve your problem with a help of these operating instructions, please contact your specialised dealer or directly the company OPTIMUM.

Optimum Maschinen Germany GmbH

Dr.- Robert - Pfleger - Str. 26

D-96103 Hallstadt

Mail: info@optimum-maschinen.de

Internet: www.optimum-maschinen.com

1 Safety

Glossary of symbols

►	gives further advice
→	calls on you to act
O	enumerations

This part of the operating instructions

- O explains the meaning and use of the warning notices included in these operating instructions,
- O defines the intended use of the geared drill,
- O points out the dangers that might arise for you or others if these instructions are not observed,
- O informs you about how to avoid dangers.

In addition to these operation instructions, please observe

- O the applicable laws and regulations,
- O the legal regulations for accident prevention,
- O the prohibition, warning and mandatory signs as well as the warning labels on the geared drill.

Always keep this documentation close to the geared drill.

INFORMATION

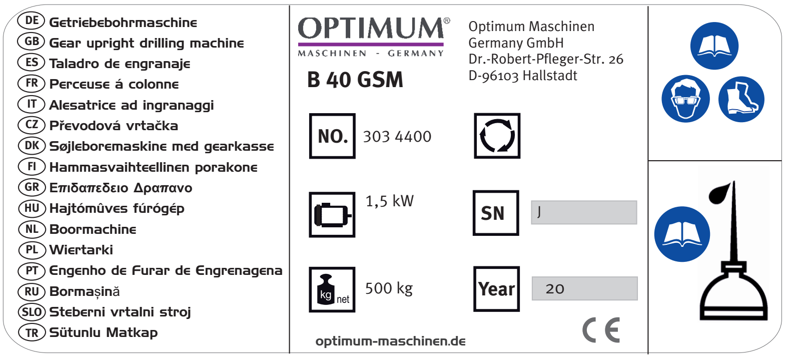
If you are unable to solve a problem using these operating instructions, please contact us for advice: ☎

Optimum Maschinen Germany GmbH
Dr. Robert-Pfleger-Str. 26

D-96103 Hallstadt

Email: info@optimum-maschinen.de

1.1 Rating plate



DE Getriebebohrmaschine
GB Gear upright drilling machine
ES Taladro de engranaje
FR Perceuse á colonne
IT Alesatrice ad ingranaggi
CZ Převodová vrtačka
DK Søjleboremaskine med gearkasse
FI Hammasvaihteellinen porakone
GR Επιδαπεδειο Δραπανο
HU Hajtómûves fúrógép
NL Boormachine
PL Wiertarki
PT Engenho de Furar de Engrenagena
RU Bormașină
SLO Steberni vrtalni stroj
TR Sütunlu Matkap

OPTIMUM®
MASCHINEN - GERMANY
B 40 GSM

Optimum Maschinen
Germany GmbH
Dr.-Robert-Pfleger-Str. 26
D-96103 Hallstadt

NO. 303 4400
1,5 kW
SN J
500 kg
Year 20

optimum-maschinen.de

1.2 Safety instructions (warning notes)

1.2.1 Classification of hazards

We classify the safety warnings into various levels. The table below gives an overview of the classification of symbols (ideogram) and the warning signs for each specific danger and its (possible) consequences.

Ideogram	Warning alert	Definition / consequence
	DANGER!	Threatening danger that will cause serious injury or death to people.
	WARNING!	A danger that might cause severe injury to the staff or can lead to death.
	CAUTION!	Danger of unsafe procedure that might cause injury to the staff or property damages.
	ATTENTION!	Situation that could cause damage to the geared drill and products and other types of damage. No risk of injury to people.
	Information	Application tips and other important or useful information and notes. No dangerous or harmful consequences for people or objects.

In case of specific dangers, we replace the pictogram by

general danger

by a warning of

injury of hands,

hazardous electrical voltage,

or

rotating parts.

1.2.2 Other pictograms

Warning of danger of slipping!

Warning risk of stumbling!

Warning hot surface!

Warning biological hazard!

Warning of automatic start-up!

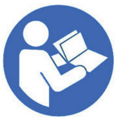
Warning tilting danger!

Warning of suspended loads!

Caution, danger of explosive substances!

Activation forbidden!

Use ear protection!



Read the operating instructions before commissioning!

Disconnect the mains plug!

Use protective glasses!

Use protective gloves!

Use protective boots!

Use protective suit!

1.3 Intended use

WARNING!

In the event of improper use, the machine
- **will endanger personnel,**
- **the machine and other material property of the operating company will be endangered,**
- **the correct function of the machine may be affected.**

The geared drill is designed and manufactured for holes in cold metals or other non flammable materials or that not constitute a health hazard using a rotating filing-stripping tool that has a number of grooves for collecting the filings.

The geared drill machine must only be used with a quick-action drill chuck.
Chucks that require a key to secure the bit must not be used on this geared drill.

If the geared drill is used in any way other than described above, modified without authorization of Optimum Maschinen Germany GmbH, then the geared drill is being used improperly.

We will not be held liable for any damages resulting from any operation which is not in accordance with the intended use.

We expressly point out that the guarantee or CE conformity will expire due to any constructive technical or procedural changes which had not been performed by the company Optimum Maschinen Germany GmbH.

It is also part of intended use that you

- observe the limits of the geared drill,
- the operating manual is observed,
- the inspection and maintenance instructions are observed.

► Technical data on page 17

WARNING!

Extremely severe injuries.

It is forbidden to make any modifications or alternations to the operation values of the geared drill.
They could endanger the staff and cause damage to the geared drill.

1.4 Reasonably foreseeable misuses

Any other use as the one determined under the "Intended use" or any use beyond the described use shall be deemed as not in conformity and is forbidden.

Any other use has to be discussed with the manufacturer.

It is only allowed to process metal, cold and non-inflammable materials with the geared drill.

In order to avoid misuses it is necessary to read and understand the operating instructions before the first commissioning. The operators must be qualified.

1.4.1 Avoiding misuses

→ Use of suitable cutting tools.

→ Adapting the speed adjustment and feed to the material and workpiece.

→ Clamp workpieces firmly and vibration-free.

ATTENTION!

The workpiece is always to be fixed by a machine vice, jaw chuck or by another appropriate clamping tool such as for the clamping claws.

WARNING!

Risk of injury caused by workpieces flying off.

Clamp the workpiece in the machine vice. Make sure that the workpiece is firmly clamped in the machine vice resp. that the machine vice is firmly clamped on the machine table.

→ Use cooling and lubricating agents to increase the durability of the tool and to improve the surface quality.

→ Clamp the cutting tools and workpieces on clean clamping surfaces.

→ Sufficiently lubricate the machine.

→ Correctly adjust the bearing clearance and the guidings.

It is recommended:

→ Insert the drill in a way that it is exactly positioned between the three clamping jaws of the quick action chuck.

When drilling make sure that

→ the suitable speed is set depending on the diameter of the drill,

→ the pressure must only be such that the drill can cut without load

→ in case of too strong pressure the drill will get worn early or even might break resp. get jammed in the hole. If the drill gets jammed immediately stop the main motor by pressing the emergency stop button,

→ for hard materials, e.g. steel, use commercial cooling / lubricating agents,

→ generally always back out the tool from the workpiece while the spindle is turning.

1.5 Possible dangers caused by the geared drill

The geared drill is state-of-the-art.

Nevertheless, there is a residual risk as the geared drill operates with

- at high speeds,
- rotating parts,
- with electrical voltages and currents.

We have used construction resources and safety techniques to minimize the health risk to persons resulting from these hazards.

If the geared drill is used and maintained by the staff who are not duly qualified, there may be a risk resulting from incorrect or unsuitable maintenance of the geared drill.

INFORMATION

Everyone involved in the assembly, commissioning, operation and maintenance must

- be duly qualified,

- strictly follow these operating instructions.

In the event of improper use

- there may be a risk to the staff,
- there may be a risk to the machine and other material values,
- the correct function of the geared drill may be affected.

Always disconnect the geared drill if cleaning or maintenance work is being carried out.

WARNING!

The geared drill may only be used with the safety devices activated. Disconnect the geared drill immediately whenever you detect a failure in the safety devices or when they are not mounted! All additional devices installed by the operator have to be equipped with the prescribed safety devices. This is your responsibility being the operating company! ► Safety devices on page 11

1.6 Qualification of personnel

1.6.1 Target group

This manual is addressed to

- the operating companies,
- the users,
- the staff for maintenance works.

Therefore, the warning notes refer to both operation and maintenance of the geared drill.

Determine clearly and explicitly who will be responsible for the different activities on the machine (operation, maintenance and repair).

Unclear responsibilities constitute a safety risk!

Always disconnect plug of the geared drill from the electrical power supply. This will prevent it from being used by unauthorized staff.

The qualifications of the staff for the different tasks are mentioned below:

Operator

The operator is instructed by the operating company about the assigned tasks and possible risks in case of improper behaviour. Any tasks which need to be performed beyond the operation in the standard mode must only be performed by the operator if it is indicated in these instructions and if the operating company expressively commissioned the operator.

Electrical specialist

Due to his professional training, knowledge and experience as well as his knowledge of respective standards and regulations the electrical specialist is able to perform works on the electrical system and to recognise and avoid any possible dangers himself.

The electrical specialist is specially trained for the working environment in which he is working and knows the relevant standards and regulations.

Specialist staff

Due to their professional training, knowledge and experience as well as their knowledge of relevant regulations the specialist staff is able to perform the assigned tasks and to recognise and avoid any possible dangers themselves.

Instructed persons

Instructed persons were instructed by the operating company about the assigned tasks and any possible risks in case of improper behaviour.

1.6.2 Authorized persons

WARNING!

Inappropriate operation and maintenance of the geared drill constitutes a danger for the staff, objects and the environment.

Only authorized staff may operate the geared drill!

Persons authorized to operate and maintain should be trained technical staff and instructed by the ones who are working for the operating company and for the manufacturer.

The operating company must

Obligations of the operating company

- train the staff,
- instruct the staff in regular intervals (at least once a year) on
  - all safety standards that apply to the machine,
  - the operation,
  - accredited technical guidelines,
- check staff‘s state of knowledge,
- document the trainings/instructions,
- require staff to confirm participation in training/instructions by means of a signature,
- check whether the staff is working safety- and risk-conscious and observe the operating instructions.

The operator must

Obligations of the operator

- have obtained a training regarding the handling of the geared drill,
- know the function and mode of action,
- before taking the machine in operation
  - have read and understood the operating manual,
  - be familiar with all safety devices and instructions.

Additional requirements regarding the qualification

For work on the following parts there are additional requirements:

- Electric components or operating materials: Must only be performed by a qualified electrician or person working under the instructions and supervision of a qualified electrician.

Before carrying out work on electrical components or operating units, the following measures must be taken, in the order given.

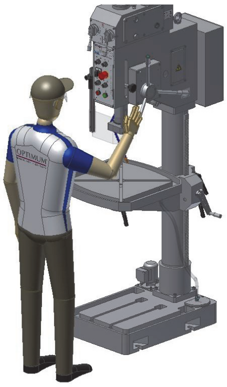
→ Disconnect all poles.

→ Secure against switching on.

→ Check if the machine is zero potential.

1.7 Operators positions

The operator's position is in front of the geared drill.



Img. 1-1: Operator positions

INFORMATION

The mains plug of the geared drill must be freely accessible.

1.8 Safety measures during operation

CAUTION!

Risk due to inhaling of health hazardous dusts and mist.

Dependent on the material which need to be processed and the used auxiliaries dusts and mist may be caused which might impair you health.

Make sure that the generated health hazardous dusts and mist are safely sucked off at the point of origin and is dissipated or filtered from the working area. To do so, use a suitable extraction unit.

CAUTION!

Risk of fire and explosion by using flammable materials or cooling lubricants.

Before processing inflammable materials (e.g. aluminium, magnesium) or using inflammable auxiliary materials (e.g. spirit) it is necessary to take additional preventive measures in order to safely avoid health risks.

CAUTION!

Risk of winding-up or cutting damages when using hand tools.

The machine is not designed for the use of hand tools (e.g. emery cloth or files). It is forbidden to use any hand tools on this machine.

1.9 Safety devices

Use the geared drill only with properly functioning safety devices.

Stop the geared drill immediately if there is a failure on the safety device or if it is not functioning for any reason.

It is your responsibility!

If a safety device has been activated or has failed, the geared drill must only be used if you

- have removed the cause of the failure,
- have verified that there is no danger resulting for the staff or objects.

WARNING!

If you bypass, remove or override a safety device in any other way, you are endangering yourself and other persons working on the geared drill. The possible consequences are

- **injuries due to components or parts of components flying off at high speed,**
- **contact with rotating parts,**
- **fatal electrocution.**

WARNING!

The separating protective equipment which is made available and delivered together with the machine is designed to reduce the risk of workpieces or fractions of them which being expelled, but not to remove them completely. Always work carefully and observe the limit values of your chipping process.

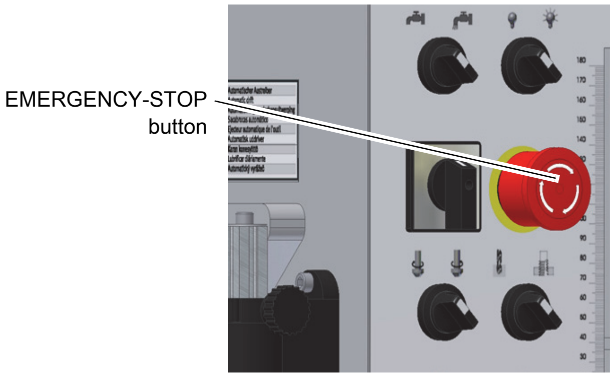
The geared drill includes the following safety devices:

- an EMERGENCY STOP push button,
- a lockable main switch,
- a drilling table with T-slots to fix the workpiece or a vice,
- a drill chuck guard, in order to prevent interference with the rotating tool.

1.9.1 EMERGENCY-STOP push button

WARNING!

Also after actuating the EMERGENCY-STOP switch, the drilling spindle is turning - depending on the previously selected speed - for a few seconds more.

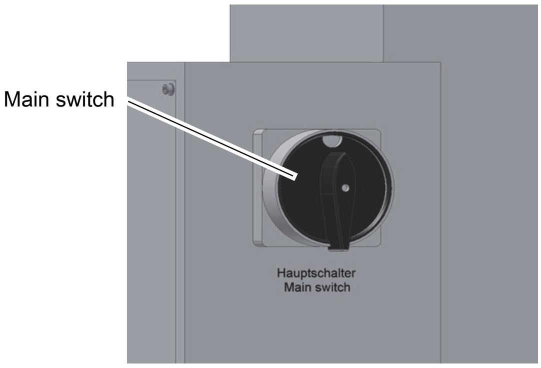


Img. 1-2: EMERGENCY-STOP button

1.9.2 Main switch

The lockable main switch can be secured in position "0" by a padlock to prevent unauthorized or accidental activation.

When the main switch is off, the power supply to the motor and the control is completely interrupted.



Img. 1-3: Main switch

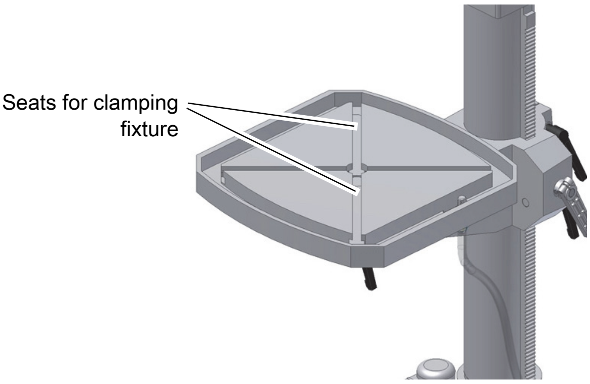
Except for the areas marked by the pictogram in the margin. In these areas there might be voltage, even if the main switch is switched-off.

1.9.3 Drilling table

Seats for T-slots are attached to the drilling table.

WARNING!

**Risk of injury due to workpieces flying off at high speed. Securely fix the workpiece on the drilling table.
If necessary, use a clamping fixture or vise.**



Img. 1-4: Drilling table

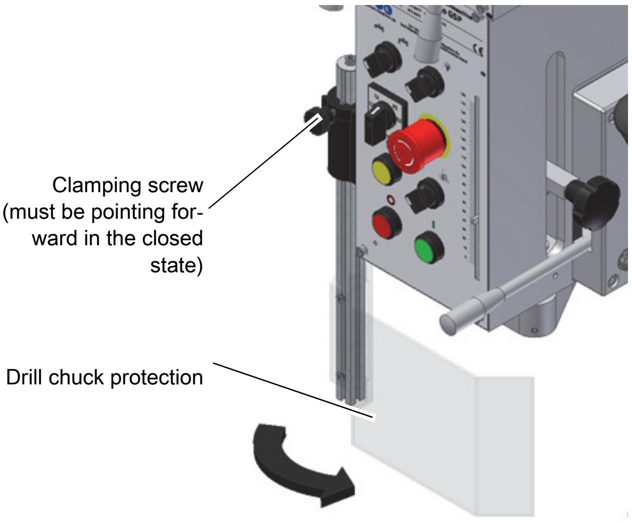
1.9.4 Drill chuck protection

Before operating the machine, the drill chuck protection must be mounted as shown.
Adjust the protective equipment to the correct height before you start working.
To do so, detach the clamping screw, adjust the required height and re-tighten the clamping screw.

A switch is integrated in the fixture of the spindle protection which monitors that the cover is closed.

INFORMATION

You cannot start the machine if the drill chuck protection is not closed.


Clamping screw (must be pointing forward in the closed state)
Drill chuck protection

Img. 1-5: Drill chuck protection

1.9.5 Prohibition, warning and mandatory signs

INFORMATION

All warning signs must be legible. Check them regularly.

1.10 Safety check

Check the geared drill before each start-up or at least once per shift. Inform the person responsible immediately of any damage, defect or change in operating function.

Check all safety devices

- at the beginning of each shift (with the machine stopped),
- once a week (with the machine in operation),
- after every maintenance and repair work.

Check that prohibition, warning and information signs and the labels on the geared drill

- are legible (clean them, if necessary),
- are complete (replace if necessary).

INFORMATION

Use the following table in order to organize the checks.

General check		
Equipment	**Check**	**OK**
Protective covers	Mounted, firmly bolted and not damaged	
Signs, Markings	Installed and legible	
Date:	checked by (signature):	

Functional check		
Equipment	**Check**	**OK**
EMERGENCY-STOP push button	After actuating an EMERGENCY STOP push button the geared drill must be switched off.	
Drill chuck protection	The geared drill must only be switched on, if the drill chuck protection is closed. The engine must switch off when the drill chuck protection is opened during operation.	
Date:	checked by (signature):	

1.11 Personal protective equipment

For certain work individual protection gear is required. This includes:

- Safety helmet,
- Protective goggles or face guard,
- Protective gloves,
- Safety shoes with steel toe caps,
- Ear protection.

Before starting work, make sure that the prescribed individual protective equipment is available in the workplace.

CAUTION!

Dirty or contaminated personnel protective equipment can cause diseases.

Clean your individual protection gear

- ☐ after each use,
- ☐ regularly, at least once a week.

Personal protective equipment for special works

Protect your face and eyes: Wear a safety helmet with facial protection when performing works where your face and eyes are exposed to hazards.

Use protective gloves when handling pieces with sharp edges.
During operation of the geared drill, the wearing of gloves is prohibited because of the risk of winding up.

Use safety shoes when you assemble, disassemble or transport heavy components.

1.12 Safety during operation

We specially point out the specific dangers when working with and on the geared drill.

WARNING!

Before switching on the geared drill make sure that there are no

- no dangers generated for persons,
- not cause damage to equipment.

Avoid any risky working practices:

- Make sure that nobody is endangered by your work.
- The instructions mentioned in these operating instructions have to be strictly observed during assembly, operation, maintenance and repair.
- Do not work on the geared drill, if your concentration is reduced, for example, because you are taking medication.
- Observe the accident prevention regulations issued by your Employers Liability Insurance Association or other competent supervisory authority, responsible for your company.
- Inform the supervisor about all endangerments or errors.
- Stay at the geared drill until all movements have come to a complete standstill.
- Use the prescribed personnel protective equipment. Make sure to wear a well-fitting work suit and, if necessary, a hairnet.
- Do not use protective gloves when drilling or milling.

1.13 Safety during maintenance

Inform the operators in good time about any maintenance and repair works.

Report all safety relevant changes and performance details of the geared drill. Document all changes, have the operating instructions updated accordingly and train machine operators.

1.13.1 Disconnecting and securing the geared drill.

Turn off the main switch of the geared drill before starting any maintenance or repair work.

Use a padlock to prevent the switch from being turned on without authorization and keep the key in a safe place.

All machine parts as well as any dangerous voltages are switched off. Excepted are only the positions which are marked with the adjoining pictogram.

Attach a warning sign on the machine.

1.13.2 Using lifting equipment

WARNING!

Use of unstable lifting equipment and load-suspension gears that break under load can cause very serious injury or even death.

Check that the lifting and load suspension gear

- they have sufficient load carrying
- and that it is in perfect condition.

Observe the accident prevention regulations issued by your Employers Liability Insurance Association or other competent supervisory authority, responsible for your company.

Fasten the loads properly. Never walk under suspended loads!

1.13.3 Mechanical maintenance work

Remove or install protection safety devices before starting any maintenance work and re-install them once the work has been completed.This includes:

- Covers,
- Safety indications and warning signs,
- earth (ground) connections.

If you remove protection or safety devices, refit them immediately after completing the work. Check if they are working properly!

1.14 Accident report

Inform your superiors and Optimum Maschinen Germany GmbH immediately in the event of accidents, possible sources of danger and any actions which almost led to an accident (near misses).

There are many possible causes for "near misses".

The sooner they are notified, the faster the causes can be eliminated.

1.15 Electrical system

Have the machine and/or the electric equipment checked regularly. Immediately eliminate all defects such as loose connections, defective wires, etc.

A second person must be present during work on live components to disconnect the power in the event of an emergency. Disconnect the lathe immediately if there is a malfunction in the power supply!

Comply with the required inspection intervals in accordance with the factory safety directive, operating equipment inspection.

The operator of the machine must ensure that the electrical systems and operating equipment are inspected with regards to their proper condition, namely,

- by a qualified electrician or under the supervision and direction of a qualified electrician, prior to initial commissioning and after modifications or repairs, prior to recommissioning
- and at certain intervals.

The deadlines must be set so that arising, foreseeable defects can be detected in time.

The relevant electro-technical rules must be followed during the inspection.

The inspection prior to initial commissioning is not required if the operator receives confirmation from the manufacturer or installer that the electrical systems and operating equipment comply with the accident prevention regulations, see conformity declaration.

Permanently installed electrical systems and operating equipment are considered constantly monitored if they are continually serviced by qualified electricians and inspected by means of measurements in the framework of operation (e.g. monitoring the insulation resistance).

1.16 Inspection deadlines

Define and document the inspection deadlines for the machine in accordance with the Factory Safety Act and perform an operational risk analysis in accordance with the Work Safety Act. Also use the inspection intervals in the maintenance section as reference values.

2 Technical data

The following information gives the dimensions and weight and is the manufacturer‘s authorised machine data.

2.1 Electrical connection	
Total connected load	3 x 400V; 1.5 kW; ~ 50Hz (~60Hz) optional 3x220V, 3x440V
Coolant pump	40W
Permitted voltage tolerance	380 V - 440 V
2.2 Drilling capacity	
Drilling capacity in steel [mm]	35
Tapping in steel [mm]	M 24
Drilling capacity in cast [mm]	45
Tapping in cast [mm]	M 30
Throat [mm]	350
Sleeve travel [mm]	180
2.3 Spindle seat	
Spindle seat	MT4
Spindle sleeve feed [mm/rev]	2 stages 0.1 and 0.2
2.4 Drilling table	
Table size [mm] Length x width	560 x 560
T-slot size [mm]	18
Maximum distance [mm] Spindle - table	780
Working surface stand [mm] Length x width	510 x 500
Maximum distance [mm] spindle - stand	1320
2.5 Working area	
Height [mm]	2400
Depth [mm]	1800
Width [mm]	1400
2.6 Speeds	
Spindle speeds ~50Hz [min^{-1}]	50 - 1450
Spindle speeds ~60Hz [min^{-1}]	60 - 1740
Number of steps	18

2.7 Floor loading

Load capacity of the substructure [kN/m^2]	14

2.8 Environmental conditions

Temperature [° C]	5 - 35
rel. humidity [%$_{rel.}$]	25 - 80

2.9 Operating material

Gear oil for spindle sleeve gear 4.5 liters	ISO VG 150 ► Lubricant on page 67
Toothed rod and drill column	commercial slide bearing grease

2.10 Coolant equipment

Max. height of pressure [m]	3
Tank capacity [liter]	5
Rate of flow [liter/min.]	2

2.11 Emissions

The airborne noise of the drilling machine is 76 to 80 dB (A) at the operator position and operating conditions in accordance with DIN ISO 8525. If the machine is installed in an area where various machines are in operation, the noise exposure (immission) on the operator of the drilling machine at the working place may exceed 85 dB(A).

INFORMATION

This numerical value was measured on a new machine under proper operating conditions. Depending on the age respectively on the wear of the machine it is possible that the noise behaviour of the machine changes.

Furthermore, the factor of the noise emission is also depending on manufacturing influencing factors, e.g. speed, material and clamping conditions.

INFORMATION

The mentioned numerical value is the emission level and not necessarily a safe working level.

Though there is a dependency between the degree of the noise emission and the degree of the noise disturbance it is not possible to use it reliably to determine if further precaution measures are required or not.

The following factors influence the actual degree of the noise exposure of the operator:

- Characteristics of the working area, e.g. size or damping behaviour,
- Other noise sources, e.g. the number of machines,
- Other processes taking place in the proximity and the period of time during which the operator is exposed to the noise.

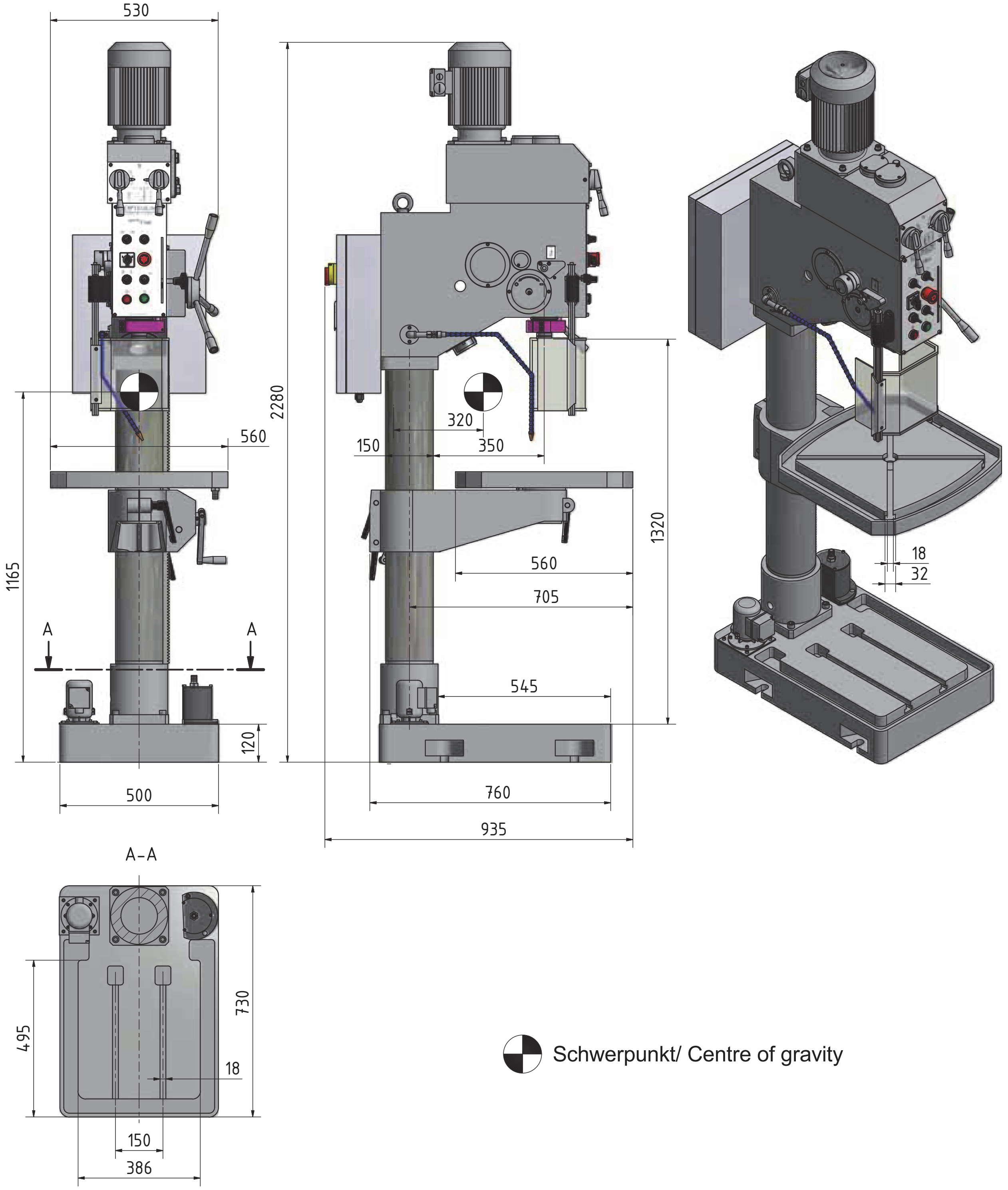
Furthermore, it is possible that the admissible exposure level might be different from country to country due to national regulations.
This information about the noise emission shall allow the operator of the machine to more easily evaluate the endangering and risks.

CAUTION!

Depending on the overall noise exposure and the basic limit values the machine operators must wear an appropriate hearing protection.

We generally recommend to use a noise protection and a hearing protection.

2.12 Dimensions B40GSM



Img.2-1: Dimensions B40GSM

3 Delivery, interdepartmental transport, assembly and commissioning

3.1 Notes on transport, installation, commissioning

Improper transport, installation and commissioning is liable to accidents and can cause damage or malfunctions to the machine for which we do not assume any liability or guarantee.

Transport the scope of delivery secured against shifting or tilting with a sufficiently dimensioned industrial truck or a crane to the installation site.

WARNING!

Severe or fatal injuries may occur if parts of the machine tumble or fall down from the forklift truck or from the transport vehicle. Follow the instructions and information on the transport box.

Note the total weight of the machine. The weight of the machine is indicated in the "Technical data" of the machine. When the machine is unpacked, the weight of the machine can also be read on the rating plate.

Only use transport devices and load suspension gear that can hold the total weight of the machine.

WARNING!

The use of unstable lifting and load suspension equipment that might break under load can cause severe injuries or even death. Check that the lifting and load suspension gear has sufficient load-bearing capacity and that it is in perfect condition.

Observe the accident prevention regulations issued by your Employers Liability Insurance Association or other competent supervisory authority, responsible for your company. Fasten the loads properly.

3.1.1 General risks during internal transport

WARNING: TILTING DANGER!

The machine may be lifted unsecured by a maximum of 2 cm.

Employees must be outside the danger zone, i.e. the reach of the load.

Warn employees and advise them of the hazard.

Machines may only be transported by authorized and qualified persons. Act responsibly during transport and always consider the consequences. Refrain from daring and risky actions.

Gradients and descents (e.g. driveways, ramps and the like) are particularly dangerous. If such passages are unavoidable, special caution is required.

Before starting the transport check the transport route for possible danger points, unevenness and faults.

Danger points, unevenness and disturbance points must be inspected before transport. The removal of danger spots, disturbances and unevenness at the time of transport by other employees leads to considerable dangers.

Careful planning of interdepartmental transport is therefore essential.

3.2 Unpacking the machine

Transport the drilling machine in its packing crate near its final installation location with a lift truck before unpacking it. If the packaging shows signs of possible transport damage, take the necessary precautions not to damage the machine when unpacking it. If any damage is discovered, the carrier and/or shipper must be notified immediately to be able to initiate the necessary steps for a claim.

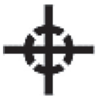
Inspect the machine completely and carefully, making sure that all materials, such as shipping documents, manuals and accessories supplied with the machine have been received.

3.3 Scope of delivery

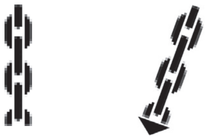
Check the machine immediately after delivery for transport damage, missing parts and loose locking bolts. Compare the scope of delivery with the attached packing list.

3.4 Load attachment points

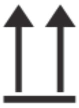
- Centres of gravity



- Load suspension points (Marking of the positions for the load suspension gear)



- Prescribed transportation position (Labelling of the top surface)



- Means of transport to be used
- Weights

3.5 Set-up and assembly

3.5.1 Assembly

WARNING!

Danger of crushing and overturning.
The installation of the geared drill must be performed by at least 2 persons.

3.5.2 Installation site requirements

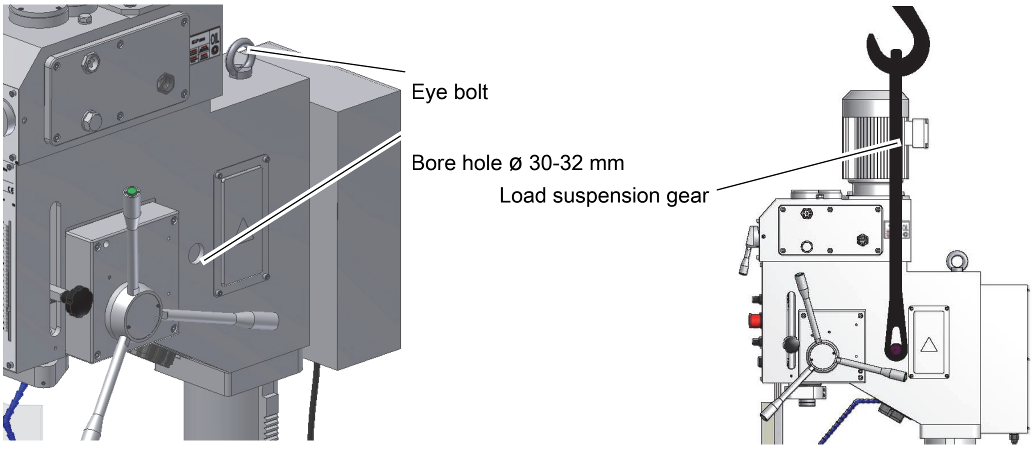
INFORMATION

The place must comply with ergonomic workplace requirements.

→ Organize the working area around the geared drill according to the local safety regulations.

- The work area for operation, maintenance and repair must not be restrictive.
  (► Dimensions B40GSM on page 19 and ► Working area on page 17).

3.5.3 Load attachment point on unpacked machine



Img. 3-1: Example of load suspension and lifting loads

→ Pass a piece of steel of sufficient thickness (round C 45 steel, thick-walled pipe) through the hole in the head. Make sure that the piece of steel does not damage any electric wire when passing through the head.

→ Suspend a load suspension gear (e.g. lifting loop) to each of the two sides of the head and to the ends of the piece of steel.

→ Fasten the load end agent on the an adequate conveyor equipment, for instance a crane.

3.6 Installation

→ Check that the geared drill foundation is horizontal with a spirit level.

→ Check that the foundation has sufficient load-bearing capacity and rigidity. The total weight is 500 kg.

→ Place the geared drill on the provided foundation.

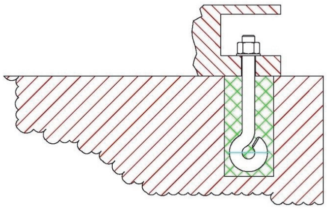
→ Fix the geared drill base to the substructure through the holes pre-drilled for this purpose.

WARNING!

The condition of the underground and the fixing type of the machine foot to the underground must be in a way that it can bear the loads of the geared drill. The foundation must be level. Check that the geared drill foundation is horizontal with a spirit level.

3.6.1 Fixing

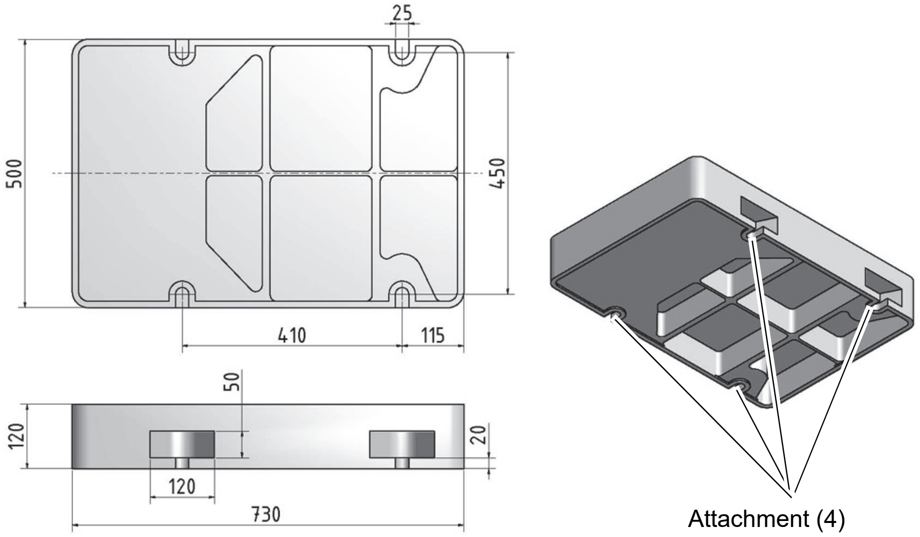
In order to provide for the necessary stability of the drilling machine connect the machine with its foot to the substructure.
We recommend that you use shear connector cartridges or heavy-duty anchors.



Img. 3-2: Attachment to the base

B40GSM_GB_3.fm

3.6.2 Assembly drawing



Img. 3-3: Assembly drawing

ATTENTION!

Tighten the fixing screws of the geared drill only as much that it is safely fixed and cannot break away or tilt over.

If the fixing screws are too tight in particular in connection with an uneven substructure it may result in a broken stand of the machine.

3.7 Cleaning of the machine

CAUTION!

Do not use compressed air to clean the machine.

Your new machine must be completely cleaned after it is unpacked to ensure that all moving parts and sliding surfaces are not damaged when the machine is operated. Each unit leaves the factory with all exposed parts and sliding surfaces suitably greased to avoid oxidation during the time that elapses before it is placed into operation. Remove all the wrapping and clean all the surfaces with a degreaser to soften and remove the protecting greases and coatings.

Clean all the surfaces with a clean cotton cloth and lubricate the machine as explained in the following section, before connecting the power and beginning to operate the machine.

3.7.1 Lubrication

The lubrication and initial greasing of your new machine consists of checking the oil sight glasses. The oil tanks must be filled to half way up the sight glass. Once these operations have been carried out, the machine can be started up.

→ The oil must be changed 200 hours after being filled for the first time, then after every 2000 operating hours.

► Oil level of the gear of the drilling spindle sleeve on page 40

→ Use the oil types recommended in the reference table ► Operating material on page 18. This table can be used to compare the characteristics of each different type of oil of your choice.

Pas d'huile a l'interieur
Sin a aceite en el interior
STOP
Avertissement / Atención:
Ne pas utiliser la machine sans huile de boîte
No utilizar la máquina sin aceite
Voir le manuel d'utilisation
Comprobar material de trabajo
OPTIMUM
optimum-maschinen.de

3.7.2 Electrical connection

CAUTION!

Install the connection cable of the machine in such a way that people will not stumble over it.

The machine is installed ready for operation with a 400V three-phase plug. Please verify if the type of current, voltage and protection fuse correspond to the values specified. A protective earth ground wire connection must be available. Mains fuse 10A to 16A

Make sure that the direction of rotation of the drive motor is correct. The switch position of the rotation selector switch for right-handed rotation (R) has to turn the drill spindle clockwise. If necessary two phase terminals on three-phase connector or your three-phase connection must be exchanged.

WARNING!

The three-phase electrical connection may only be performed by an electrician or under the guidance and supervision of an electrician.

3.8 First commissioning

WARNING!

First commissioning may only take place after proper installation.

There is a danger to persons and equipment, if the first commissioning carried out by inexperienced personnel. We do not accept any liability for damages caused by incorrectly performed commissioning.

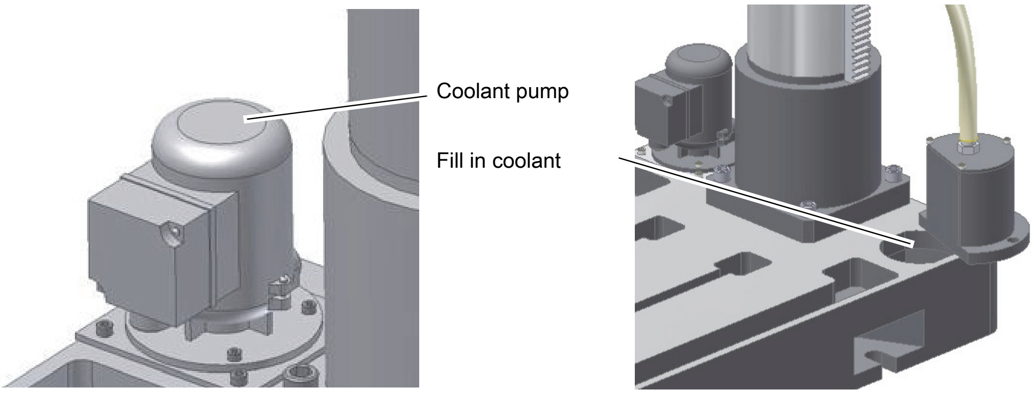
ATTENTION!

Before commissioning the machine, all bolts, fastenings and protections must be checked and retightened as necessary!

3.9 Coolant pump

ATTENTION!

The coolant pump also delivers if it turns in the wrong direction. Due to the wrong turning direction the pump is destroyed within a short time.



Img.3-4: Coolant pump, coolant filler hole

3.10 Checks

→ Check the geared drill as indicated under ► Safety check on page 13.

→ Check the geared drill as indicated under ► Oil level of the gear of the drilling spindle sleeve on page 40.

3.11 Warming up the machine

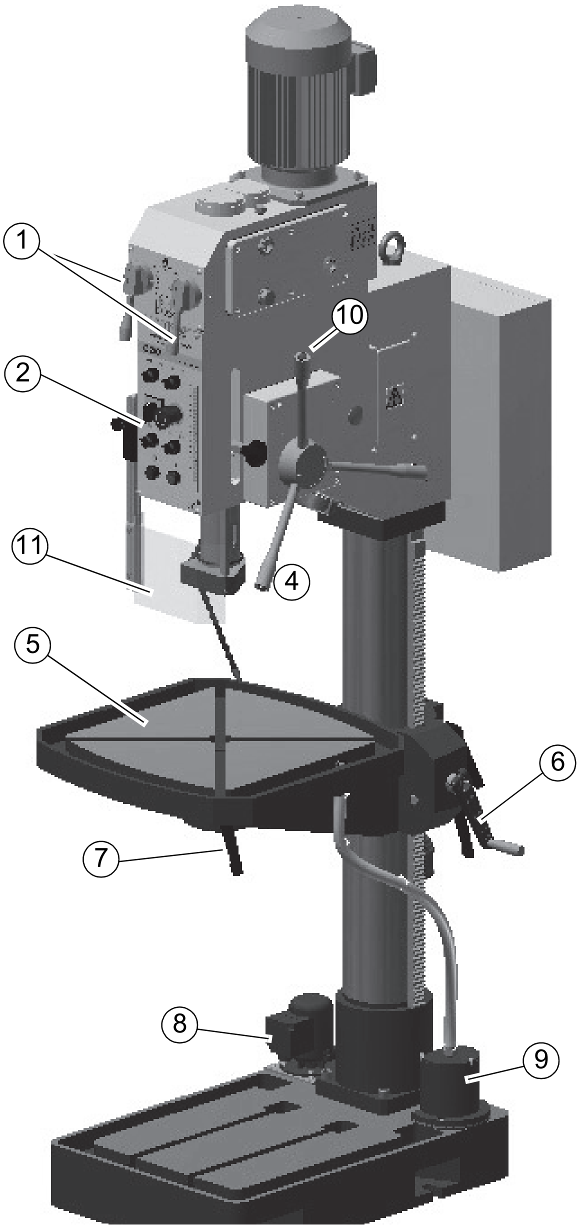
ATTENTION!

If the geared drill and in particular the drilling spindle is immediately operated at maximum load when it is cold it may result in damages.

If the machine is cold, e.g. directly after having transported the machine, it should be warmed up at a spindle speed of only 500 1/min for the first 30 minutes.

4 Handling

4.1 Control and indicating elements



Pos.	Designation	Pos.	Designation
1	Gear selector for speed increments	2	Control panel
3	Drill chuck protection	4	Spindle sleeve lever with switch for spindle sleeve feed
5	Drilling table	6	Table height adjustment
7	Clamping lever table revolution	8	Coolant pump
9	Chip filter	10	Push button spindle sleeve feed and change of direction
11	Drill chuck protection		

4.2 Safety

Use the machine only under the following conditions:

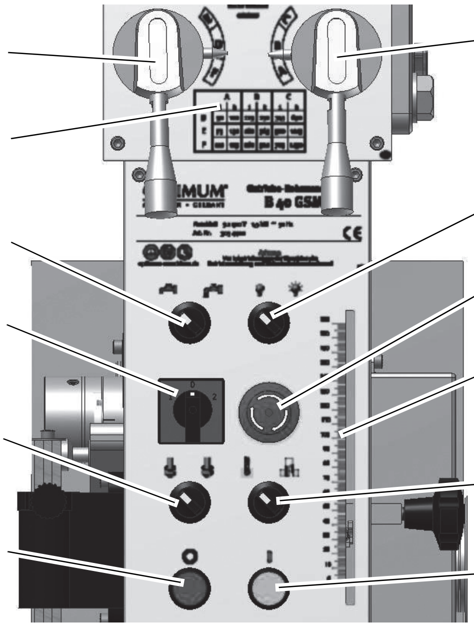
- The machine is in proper working order.
- The machine is used as prescribed.
- The operating manual is followed.
- All safety devices are installed and activated.

All failures should be eliminated immediately. Stop the machine immediately in the event of any anomaly in operation and make sure it cannot be started up accidentally or without authorization

Notify the person responsible immediately of any modification.

► Safety during operation on page 15

4.2.1 Control panel



Img.4-1: Operating element on the control panel

Operating mode selection switch

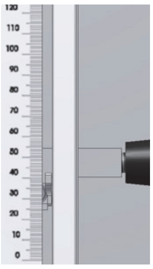
"Threading or Drilling" is selected with the selection switch.

Drilling operating mode

The auxiliary function of the micro switches in the drilling depth to the direction of rotation change is deactivated.

Operating mode threading

The function of the micro switches in the drilling depth and the function of the direction of rotation change by the push-button actuators in the spindle sleeve lever are activated.



Drill depth stop

The geared drill has two micro switches in the depth stop.

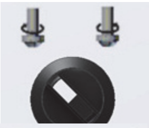
The position of adjustable switching point is adjusted with the drill depth stop screw.

The adjustable switch point turns off the automatic spindle feed. In threading mode it triggers the change of direction

The adjustable switch point turns off the automatic spindle feed. In threading mode it triggers the change of direction

Rotation direction switch

The direction of rotation of the drilling spindle can be switched by actuating the rotation direction switch.

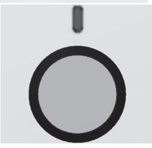


Step counter switch motor

With the step rotation switch the speed stage of the motor is selected.

Push button ON

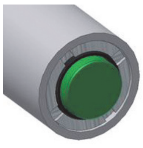
The push button "ON" switches on the rotation of the drilling spindle.



Push button in lever for spindle sleeve feed

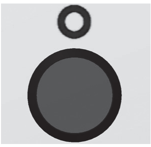
The push button in the spindle speed lever switches the spindle sleeve feed On or OFF.

In the mode of operation “threading“ takes place with operation a direction of rotation change. The spindle sleeve feed is switched off.



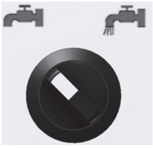
Push button OFF

The "push button OFF“ switches the rotation of the drilling spindle off.



Coolant pump ON / OFF

Switches the coolant pump.



Machine illumination ON/OFF

Switches the machine lamp.

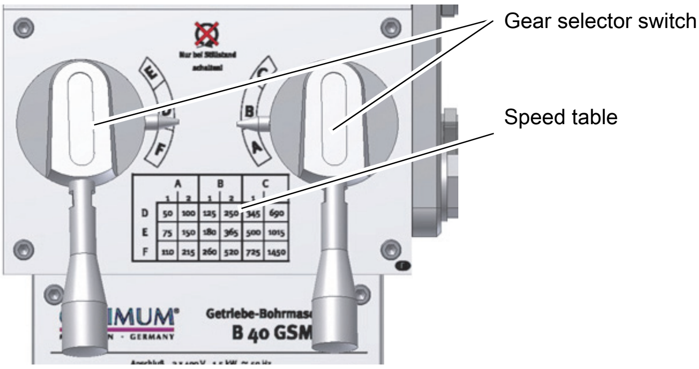
Gear selector switch

The speed of the drill spindle is set by actuating the gear selector switch and the step counter switch motor.

ATTENTION!

Changing the speed when the bit-holder spindle is turning may cause damage to the machine.

- **Disconnect the machine before changing the speed.**
- **Wait until the bit-holder spindle has come to a complete halt.**

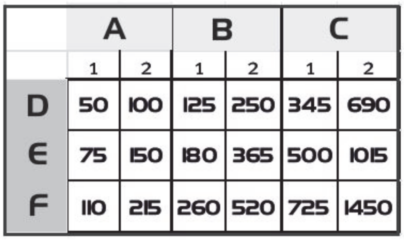


Img.4-2: Gear selector switch

INFORMATION

When choosing the right rate, use the speed table on the bit-holder head.

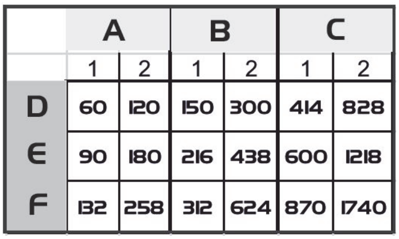
Speed table - for ~50Hz connection



	A		B		C	
	1	2	1	2	1	2
D	50	100	125	250	345	690
E	75	150	180	365	500	1015
F	110	215	260	520	725	1450

Img. 4-3: ~ 50Hz

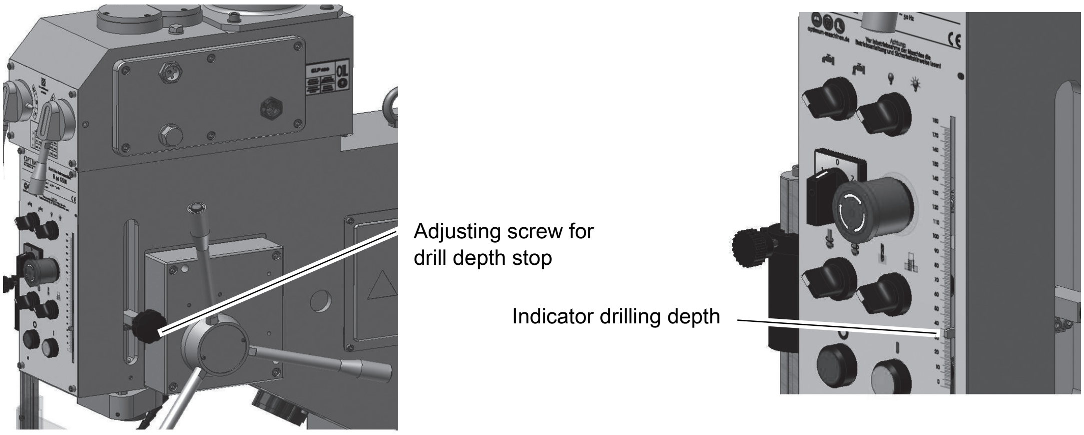
Speed table - for ~60Hz connection



	A		B		C	
	1	2	1	2	1	2
D	60	120	150	300	414	828
E	90	180	216	438	600	1218
F	132	258	312	624	870	1740

Img. 4-4: ~ 60Hz

4.3 Drill depth stop



Img. 4-5: Drill depth stop

- ❍ Use the drilling depth stop when drilling several holes of the same depth.
- → Loosen the adjusting screw for drill depth stop and move it until the desired drilling depth is identical to the indicator.
- → Retighten the adjusting screw.
- ❍ The spindle can now only be lowered to the set depth.

4.4 Spindle sleeve feed

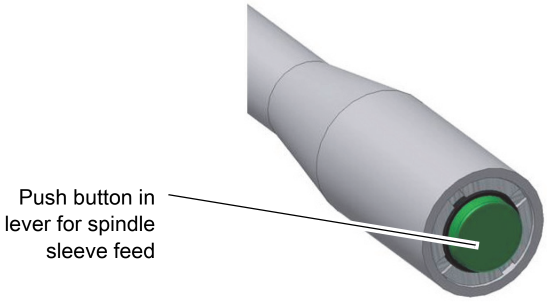
The spindle sleeve feed is performed manually by actuating the spindle sleeve lever or automatically.

4.4.1 Manual spindle sleeve feed

Move the sleeve downward by means of the spindle sleeve lever. The sleeve is returned to its initial position by means of the spring force.

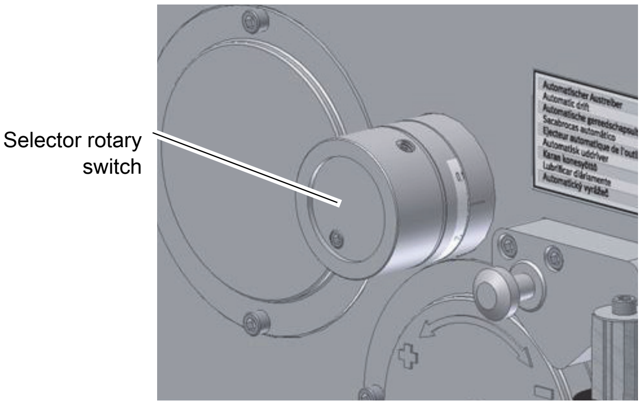
4.4.2 Automatic spindle sleeve feed

The feed is activated by pressing the push buttons in the spindle sleeve lever. The feed is performed by an electromagnetic coupling. The feed is switched off by the drilling depth stop or by pressing the push button in the spindle sleeve lever again.



Img. 4-6: Feed activation and spindle sleeve lever

→ Select the speed of the spindle sleeve feed actuating the selector rotary switch:
- 0.10 mm / turn
- 0.20 mm / turn



Img. 4-7: Selector rotary switch for the speed of the spindle feed

INFORMATION

The higher the preset number of revolutions, the greater the feed speed in the sleeve. Adjust the correct speed depending on the used material and on the drill diameter.

→ Adjust the depth stop ► Drill depth stop on page 29.

→ Press the push button in the spindle sleeve lever. The electromagnetic spindle sleeve feed is activated.

As soon as the preset drilling depth in the drilling depth stop is attained the micro switch deactivates the drill feed. The drilling sleeve returns to the top position by spring force.

4.5 Tool holder

4.5.1 Unfitting the drill chuck

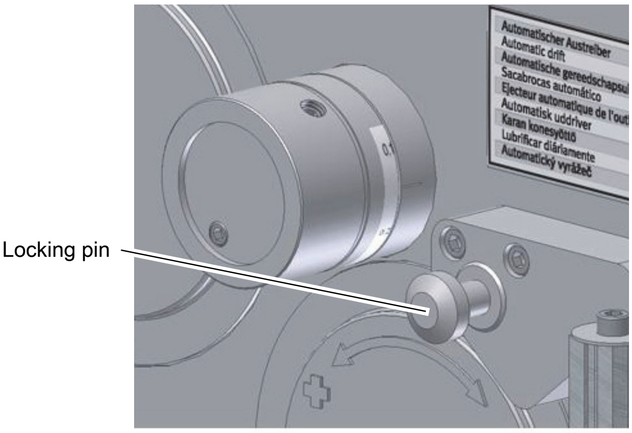
WARNING!

Perform the following work only when you have switched off and locked the main switch.

Disassembly with separate drill drift

→ Move the sleeve downwards until you can introduce the locking pin completely.

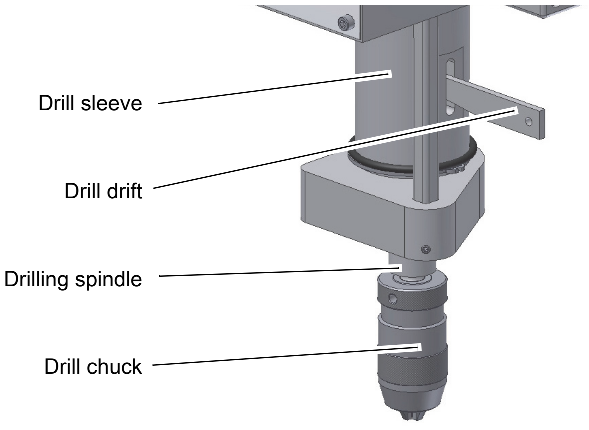
→ Turn the drilling spindle until the openings of the sleeve and of the drilling spindle are superimposed. Switch the gear selector to a higher speed level in order to facilitate the turning of the sleeve.



Img. 4-8: Locking pin

→ Loosen the morse taper drill chuck by inserting the drift through the openings of quill and spindle and move it forward with light strokes.

→ Due to the drift an advancing force is generated down.



Img. 4-9: Drill sleeve

Disassembly with integrated drill drift

ATTENTION!

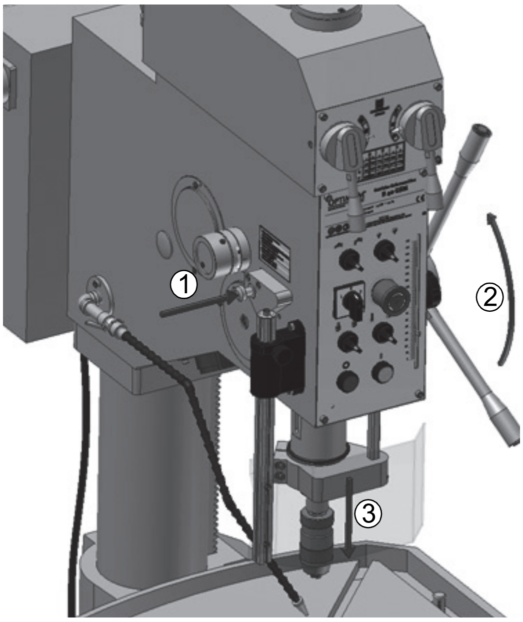
Hold the tool ③ or drill chuck tight.

With the below described procedure the taper mandrel is being loosened from the drilling spindle. The tool and/or the drill chuck will fall down.

→ Move the sleeve downwards until you can introduce the locking pin ① a little.

→ Press the spindle sleeve lever ② upward.

❍ The taper mandrel is pressed out of the drill spindle.



Img. 4-10: Disassembly

4.5.2 Fitting the drill chuck

→ Check and, if necessary, clean the conical seat in the drilling spindle and at the taper mandrel of the tool or the drill chuck.

→ Press the taper mandrel into the drilling spindle.

4.6 Cooling

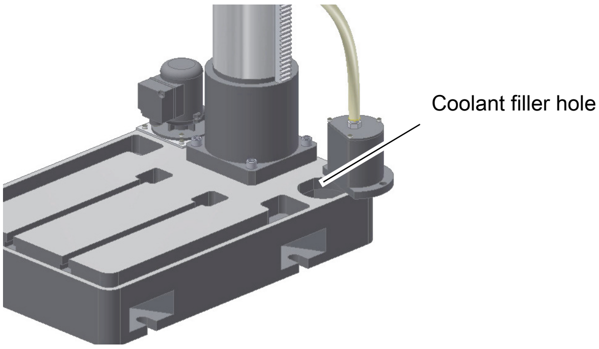
WARNING!

Ejection and overflowing of coolants and lubricants. Make sure you do not get the cooling lubricants on the floor. Spilled on the floor cooling agents must be removed immediately.

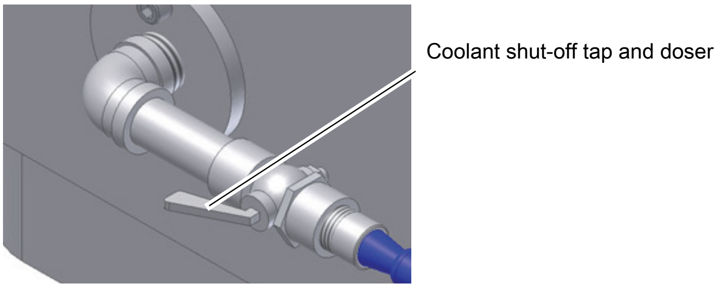
The friction generated during rotation can cause the edge of the tool to become very hot.

The tool should be cooled during the drilling process. Cooling the tool with a suitable cooling lubricant ensures better working results and a longer edge life of the tools.

This is best realised by a separate cooling equipment. If there is no cooling equipment included in the delivery volume, you can cool by means of a spray gun or a washing bottle.



Img.4-11: Filler hole



Img.4-12: Coolant shut-off tap and doser

→ Adjust the flow using the shut-off and dosing tap.

ATTENTION!

Failure of the pump in case of dry running. The pump is lubricated by the cooling agent. Do not start up the pump without cooling agent.

CAUTION!

Danger of injury due to brushes getting caught or pulled in.

Use a spray gun or a washing bottle for cooling.

INFORMATION

Use a water-soluble and non-pollutant oil as a cooling agent. This can be acquired from authorised distributors.

Re-use cooling agents and lubricants.

Respect the environment when disposing of any lubricants and cooling agents.

Follow the manufacturer’s disposal instructions.

4.7 Working with the machine

4.7.1 Preparation

WARNING!

For drilling jobs, it is necessary to clamp the workpiece firmly to prevent the bit catching on the pieces. A machine vice or clamping claws is a suitable clamping device.

Put a wooden or plastic board beneath the workpiece to avoid drilling through to the work table, vice, etc.

If necessary, adjust the required drilling depth using the depth stop to obtain a constant result.

Please make sure to use a suitable dust suction when treating wood since wood dust may be health hazardous.

Wear a suitable dust mask when performing works at which dust is generated.

→ First, select the speed of the bit. This will depend on the diameter of the bit being used and the material. ► Determining the cutting speed and the speed on page 34

4.7.2 During work

The spindle sleeve is advanced by means of the star wheel. Make sure that the feed is constant and not too fast.

The spindle sleeve is returned to its initial position by the return spring.

WARNING!

Seizing of clothes and / or hair.

- ☐ Make sure to wear well-fitting work during drilling work.
- ☐ Do not use gloves.
- ☐ If necessary, use a hairnet.

CAUTION!

Danger of bumps from the levers on the star wheel.

Do not release the star wheel when repositioning the drilling spindle sleeve.

Pull back the drilling spindle sleeve by hand.

CAUTION!

Risk of crushing! Do not grap between the drill head and the sleeve.

INFORMATION

The smaller the bit the more easily it may break.

In the case of deep drilling, remove the bit from time to time to remove filings from the drill. Add a few drops of oil to reduce friction and prolong the service life of the bit.

5 Determining the cutting speed and the speed

5.1 Table cutting speeds / infeed

Material table						
Material to be processed	Recommended cutting speed **Vc** in m/min	Recommended infeed **f** in mm/revolution				
		Drill bit diameter **d** in mm				
		2...3	>3...6	>6...12	>12...25	>25...50
Unalloyed construction steels < 700 N/mm²	30 - 35	0.05	0.10	0.15	0.25	0.35
Alloyed construction steels > 700 N/mm²	20 - 25	0.04	0.08	0.10	0.15	0.20
Alloyed steels < 1000 N/mm²	20 - 25	0.04	0.08	0.10	0.15	0.20
Steels, low stability < 800 N/mm²	40	0.05	0.10	0.15	0.25	0.35
Steel, high stability > 800 N/mm²	20	0.04	0.08	0.10	0.15	0.20
non-rust steels > 800 N/mm²	12	0.03	0.06	0.08	0.12	0.18
Cast iron < 250 N/mm²	15 - 25	0.10	0.20	0.30	0.40	0.60
Cast iron > 250 N/mm²	10 - 20	0.05	0.15	0.25	0.35	0.55
CuZn alloy brittle	60 - 100	0.10	0.15	0.30	0.40	0.60
CuZn alloy ductile	35 - 60	0.05	0.10	0.25	0.35	0.55
Aluminium alloy up to 11% Si	30 - 50	0.10	0.20	0.30	0.40	0.60
Thermoplastics	20 - 40	0.05	0.10	0.20	0.30	0.40
Thermosetting materials with organic filling	15 - 35	0.05	0.10	0.20	0.30	0.40
Thermosetting materials with an-organic filling	15 - 25	0.05	0.10	0.20	0.30	0.40

5.2 Speed table

Vc in m/min	4	6	8	10	12	15	18	20	25	30	35	40	50	60	80	100
Drill bit **Ø** in mm	Speed **n** in rpm															
1,0	1274	1911	2548	3185	3822	4777	5732	6369	7962	9554	11146	12739	15924	19108	25478	31847
1,5	849	1274	1699	2123	2548	3185	3822	4246	5308	6369	7431	8493	10616	12739	16985	21231
2,0	637	955	1274	1592	1911	2389	2866	3185	3981	4777	5573	6369	7962	9554	12739	15924

2,5	510	764	1019	1274	1529	1911	2293	2548	3185	3822	4459	5096	6369	7643	10191	12739
3,0	425	637	849	1062	1274	1592	1911	2123	2654	3185	3715	4246	5308	6369	8493	10616
3,5	364	546	728	910	1092	1365	1638	1820	2275	2730	3185	3640	4550	5460	7279	9099
4,0	318	478	637	796	955	1194	1433	1592	1990	2389	2787	3185	3981	4777	6369	7962
Vc in m/min	4	6	8	10	12	15	18	20	25	30	35	40	50	60	80	100
Drill bit Ø in mm	Speed **n** in rpm															
4,5	283	425	566	708	849	1062	1274	1415	1769	2123	2477	2831	3539	4246	5662	7077
5,0	255	382	510	637	764	955	1146	1274	1592	1911	2229	2548	3185	3822	5096	6369
5,5	232	347	463	579	695	869	1042	1158	1448	1737	2027	2316	2895	3474	4632	5790
6,0	212	318	425	531	637	796	955	1062	1327	1592	1858	2123	2654	3185	4246	5308
6,5	196	294	392	490	588	735	882	980	1225	1470	1715	1960	2450	2940	3920	4900
7,0	182	273	364	455	546	682	819	910	1137	1365	1592	1820	2275	2730	3640	4550
7,5	170	255	340	425	510	637	764	849	1062	1274	1486	1699	2123	2548	3397	4246
8,0	159	239	318	398	478	597	717	796	995	1194	1393	1592	1990	2389	3185	3981
8,5	150	225	300	375	450	562	674	749	937	1124	1311	1499	1873	2248	2997	3747
9,0	142	212	283	354	425	531	637	708	885	1062	1238	1415	1769	2123	2831	3539
9,5	134	201	268	335	402	503	603	670	838	1006	1173	1341	1676	2011	2682	3352
10,0	127	191	255	318	382	478	573	637	796	955	1115	1274	1592	1911	2548	3185
11,0	116	174	232	290	347	434	521	579	724	869	1013	1158	1448	1737	2316	2895
12,0	106	159	212	265	318	398	478	531	663	796	929	1062	1327	1592	2123	2654
13,0	98	147	196	245	294	367	441	490	612	735	857	980	1225	1470	1960	2450
14,0	91	136	182	227	273	341	409	455	569	682	796	910	1137	1365	1820	2275
15,0	85	127	170	212	255	318	382	425	531	637	743	849	1062	1274	1699	2123
16,0	80	119	159	199	239	299	358	398	498	597	697	796	995	1194	1592	1990
17,0	75	112	150	187	225	281	337	375	468	562	656	749	937	1124	1499	1873
18,0	71	106	142	177	212	265	318	354	442	531	619	708	885	1062	1415	1769
19,0	67	101	134	168	201	251	302	335	419	503	587	670	838	1006	1341	1676
20,0	64	96	127	159	191	239	287	318	398	478	557	637	796	955	1274	1592
21,0	61	91	121	152	182	227	273	303	379	455	531	607	758	910	1213	1517
22,0	58	87	116	145	174	217	261	290	362	434	507	579	724	869	1158	1448
23,0	55	83	111	138	166	208	249	277	346	415	485	554	692	831	1108	1385
24,0	53	80	106	133	159	199	239	265	332	398	464	531	663	796	1062	1327
25,0	51	76	102	127	153	191	229	255	318	382	446	510	637	764	1019	1274
26,0	49	73	98	122	147	184	220	245	306	367	429	490	612	735	980	1225
27,0	47	71	94	118	142	177	212	236	295	354	413	472	590	708	944	1180
28,0	45	68	91	114	136	171	205	227	284	341	398	455	569	682	910	1137
29,0	44	66	88	110	132	165	198	220	275	329	384	439	549	659	879	1098
30,0	42	64	85	106	127	159	191	212	265	318	372	425	531	637	849	1062
31,0	41	62	82	103	123	154	185	205	257	308	360	411	514	616	822	1027
32,0	40	60	80	100	119	149	179	199	249	299	348	398	498	597	796	995
33,0	39	58	77	97	116	145	174	193	241	290	338	386	483	579	772	965
34,0	37	56	75	94	112	141	169	187	234	281	328	375	468	562	749	937

35,0	36	55	73	91	109	136	164	182	227	273	318	364	455	546	728	910
36,0	35	53	71	88	106	133	159	177	221	265	310	354	442	531	708	885
37,0	34	52	69	86	103	129	155	172	215	258	301	344	430	516	689	861
38,0	34	50	67	84	101	126	151	168	210	251	293	335	419	503	670	838
Vc in m/min	4	6	8	10	12	15	18	20	25	30	35	40	50	60	80	100
Drill bit Ø in mm	Speed **n** in rpm															
39,0	33	49	65	82	98	122	147	163	204	245	286	327	408	490	653	817
40,0	32	48	64	80	96	119	143	159	199	239	279	318	398	478	637	796
41,0	31	47	62	78	93	117	140	155	194	233	272	311	388	466	621	777
42,0	30	45	61	76	91	114	136	152	190	227	265	303	379	455	607	758
43,0	30	44	59	74	89	111	133	148	185	222	259	296	370	444	593	741
44,0	29	43	58	72	87	109	130	145	181	217	253	290	362	434	579	724
45,0	28	42	57	71	85	106	127	142	177	212	248	283	354	425	566	708
46,0	28	42	55	69	83	104	125	138	173	208	242	277	346	415	554	692
47,0	27	41	54	68	81	102	122	136	169	203	237	271	339	407	542	678
48,0	27	40	53	66	80	100	119	133	166	199	232	265	332	398	531	663
49,0	26	39	52	65	78	97	117	130	162	195	227	260	325	390	520	650
50,0	25	38	51	64	76	96	115	127	159	191	223	255	318	382	510	637

5.2.1 Example for calculating the required speed on your drilling machine

The necessary speed is depending on the diameter of the drill bit, on the material which is being machined as well as on the cutting material of the drill bit.

Material which needs to be drilled: St37

Cutting material (drill bit): HSS spiral bit

Set point of the cutting speed [v_c] according to the table: 40 meters per minute

Diameter [d] of your drill bit: 30 mm = 0.03 m [meters]

Selected infeed [f] according to the table: about 0.35 mm/rev

$$\text{Speed} \quad n = \frac{V_c}{\pi \times d} = \frac{40\text{m}}{\text{min} \times 3.14 \times 0.03\text{m}} = 425 \text{ rpm}$$

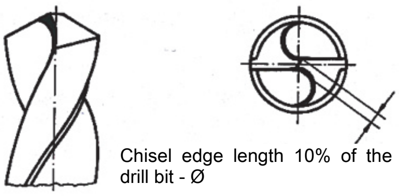
Set a speed on your drilling machine which is less than the determined speed.

INFORMATION

In order to facilitate the production of larger drill holes they need to be pre-drilled. This way, you reduce the cutting forces and improve the guiding of the drill bit.

The pre-drilling diameter is depending on the length of the chisel edge. The chisel edge does not cut, but it squeezes the material. The chisel edge is positioned at an angle of 55° to the major cutting edge.

As a general rule of thumb it applies: The pre-drilling diameter is depending on the length of the chisel edge.



Chisel edge length 10% of the drill bit - Ø

Recommended working steps for a drilling diameter of 30 mm

Example:

1st working step: Pre-drilling with Ø 5 mm.

2nd working step: Pre-drilling with Ø 15 mm.

3rd working step: Drilling with Ø 30 mm.

6 Maintenance

In this chapter you will find important information about

- Inspection
- Maintenance
- Repairs

ATTENTION!

Properly performed regular maintenance is an essential prerequisite for

- **operational safety,**
- **failure-free operation,**
- **long service life of the machine and**
- **the quality of the products which you manufacture.**

The equipment and devices of other manufacturers that are used in conjunction with the machine must be in perfect condition.

ENVIRONMENTAL PROTECTION

During work on the spindle head, please make sure that

- **collector tanks are used with sufficient capacity for the amount of liquid to be collected.**
- **liquids and oils should not be split on the ground.**

Clean up any spilt liquid or oils immediately using proper oil-absorption methods and dispose of them in accordance with current legal requirements on the environment.

Collect leakages

Do not re-introduce liquids split outside the system during repair or as a result of leakage from the reserve tank:collect them in a collecting container to be disposed of.

Disposal

Never dump oil or other substances which are harmful for the environment in water inlets, rivers or channels.

Used oils must be delivered to a collection centre. Consult your supervisor if you do not know where the collection centre is.

6.1 Safety

WARNING!

The consequences of incorrect maintenance and repair work may include:

- **very serious injury to personnel working on the machine,**
- **damage to the machine.**

Only qualified staff should carry out maintenance and repair work on the machine.

Validation

Check and maintain all safety-relevant stop, control and measuring devices (validation).

Documentation

Record all tests and works in a operator's log resp. log book.

6.1.1 Preparation

WARNING!

Only carry out work on the machine if it has been unplugged from the mains power supply.

► Disconnecting and securing the geared drill. on page 15. Position a warning sign.

6.1.2 Restarting

Before restarting run a safety check. ► Safety check on page 13

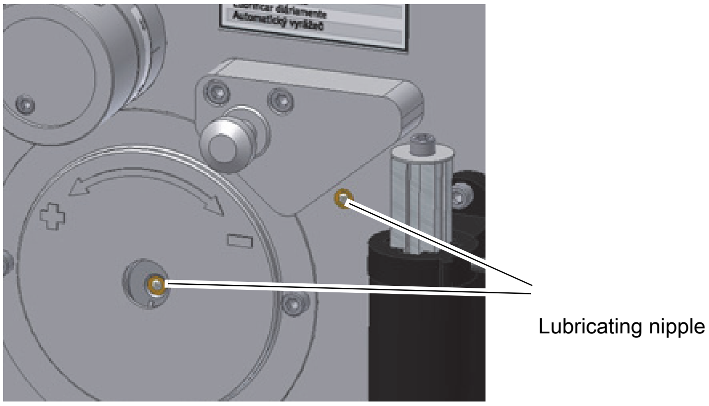
WARNING!

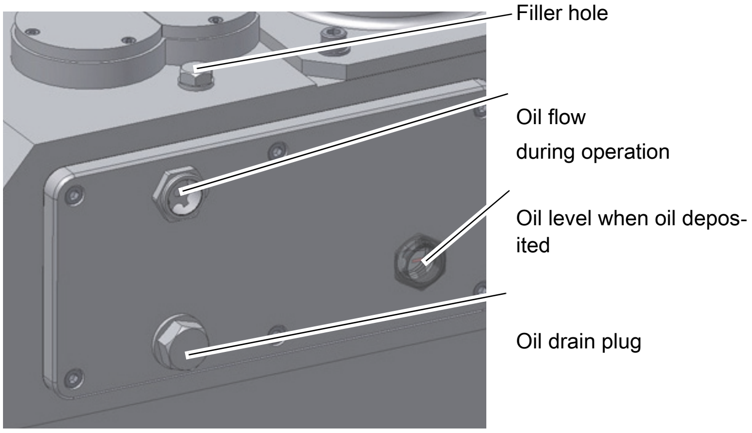
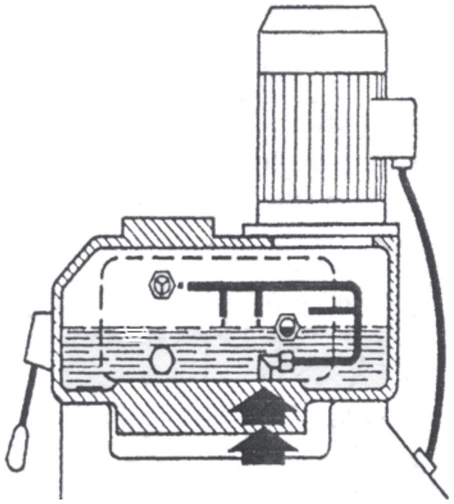
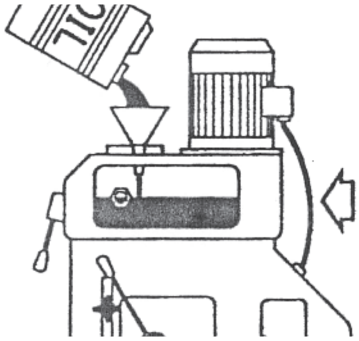
Before starting the machine you must be sure that

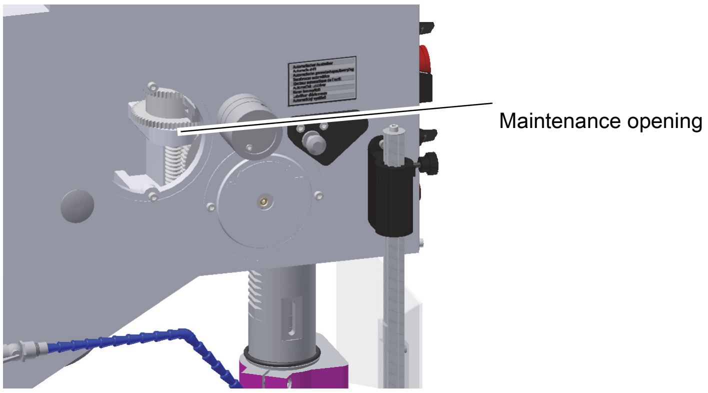
- ☐ **no dangers generated for persons,**
- ☐ **the machine is not damaged.**

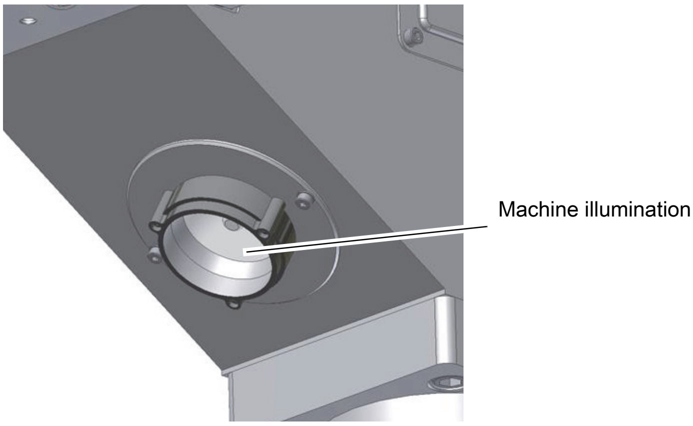
6.2 Inspection and maintenance

The type and level of wear depends to a large extent on the individual usage and operating conditions. For this reason, all the intervals are only valid for the authorised conditions.

Interval	Where?	What?	How?
Start of shift after every maintenance or repair work	Clean machine	► Safety check on page 13	
every day	Drill head	Lubricating	→ Lubricate the lubricating nipples on the lathe saddle.  Img.6-1: Lubricating nipple drill head

Interval	Where?	What?	How?
Start of shift after every maintenance or repair work	Drill head	Oil level of the gear of the drilling spindle sleeve	→ Check the oil level in the inspection glass The glass oil level (deposed) should be half-covered.  Filler hole Oil flow during operation Oil level when oil deposited Oil drain plug Img. 6-2: Oil level of the gear of the drilling spindle sleeve  Img. 6-3: Functional schematic
First after 200 operatingm hours, then every 2000 operating hours	Drill head	Changing the oil in the gear of the drilling spindle sleeve	→ For oil change use an appropriate collecting tray of sufficient capacity. → Unscrew the screw from the drain hole.  Img. 6-4: Changing the oil in the gear of the drilling spindle sleeve Re-fill the gear with gear oil. Approx. consumption 4.5 litres. Pay attention to the correct level. ► Operating material on page 18.

Interval	Where?	What?	How?
First after 100 operatingm hours, then every 200 operating hours	Spindle sleeve feed	Oiling / greasing	→ Oiling or greasing the gears regularly.  Img. 6-5: Maintenance opening
Every month	Drill column and toothed rack		→ Oil the drilling column in regular intervals using standard oil. → Lubricate the toothed rack in regular intervals using standard grease.
	Toothed rack Drill sleeve		→ Oil the toothed rack (toothing) and the drill sleeve in regular intervals using standard oil.
as required	Coolant equipment	Coolant pump	The coolant pump is maintenance-free. ► Cooling lubricants and tanks on page 43 ► Inspection plan for water-mixed cooling lubricants on page 44 → Rinse the coolant pump if you use coolants that leave residues.

Interval	Where?	What?	How?
as required	Illumination	Replacing the light bulb	If the light bulb is defective: → Unscrew the glass cover of the machine illumination. → Unscrew the light bulb by turning it to the left and by slightly pressing the bulb into the socket (bayonet). → Replace the light bulb. → Screw the glass cover onto the machine illumination.  Img. 6-6: Machine illumination
based on operator's empirical values in accordance with German DGUV (BGV A3)	Electrical system	Electrical inspection	► Obligations of the operating company on page 10 ► Electrical system on page 16 ► Validation on page 38

6.3 Repair

6.3.1 Customer service technician

For any repair work request the assistance of an authorised customer service technician. Contact your specialist dealer if you do not have customer service's information or contact Stürmer Maschinen GmbH in Germany who can provide you with a specialist dealer's contact information. Optionally, the

Stürmer Maschinen GmbH

Dr.-Robert-Pfleger-Str. 26

D- 96103 Hallstadt

can provide a customer service technician, however, the request for a customer service technician can only be made via your specialist dealer.

If the repairs are carried out by qualified technical personnel, they must follow the indications given in these operating instructions.

Optimum Maschinen Germany GmbH accepts no liability nor does it guarantee against damage and operating malfunctions resulting from failure to observe these operating instructions.

For repairs, only use

- faultless and suitable tools,
- original parts or parts from series expressly authorised by Optimum Maschinen Germany GmbH.

6.4 Cooling lubricants and tanks

CAUTION!

The cooling lubricant can cause diseases. Avoid direct contact with cooling lubricant or parts covered in cooling lubricant.

Cooling lubricant circuits and tanks for water-cooling lubricant mixtures must be completely emptied, cleaned and disinfected as needed, but at least once per year or every time the cooling lubricant is replaced.

If fine chips and other foreign matters are accumulated in the coolant tank, the machine can no longer be correctly supplied with coolant. Furthermore, the lifetime of the coolant pump is reduced.

When processing cast iron or similar materials generating fine chips, cleaning the coolant tank more often is recommended.

Limit values

The cooling lubricant must be replaced, the cooling lubricant circuit and tank emptied, cleaned and disinfected if

- the pH value drops by more than 1 based on the value during initial filling. The maximum permissible pH value during initial filing is 9.3
- there is a perceivable change in the appearance, odour, floating oil or increase of the bacteria to more than 10/6/ml
- there is an increase in nitrite content to more than 20 ppm (mg/1) or nitrate content to more than 50 ppm (mg/1)
- there is an increase in the N-nitrosodiethanolamine (NDELA) to more than 5 ppm (mg/a)

CAUTION!

Comply with the manufacturer's specifications for mixture ratios, hazardous substances, e.g. system cleaners, including their permissible minimum use times.

CAUTION!

Since the cooling lubricant escapes under high pressure, pumping out the coolant by using the existing cooling lubricant pump via a pressure hose into a suitable tank is not recommended.

ENVIRONMENTAL PROTECTION

During work on the cooling lubricant equipment please make sure that

- **collector tanks are used with sufficient capacity for the amount of liquid to be collected.**
- **liquids and oils should not be spilled on the ground.**

Clean up any spilled liquid or oils immediately using proper oil-absorption methods and dispose of them in accordance with current statutory environmental regulations.

Collect leakages

Do not re-introduce liquids spilled outside the system during repair or as a result of leakage from the reserve tank, instead collect them in a collecting container for disposal.

Disposal

Never dump oil or other substances which are harmful to the environment into water inlets, rivers or channels. Used oils must be delivered to a collection centre. Consult your supervisor if you do not know where the collection centre is.

6.4.1 Inspection plan for water-mixed cooling lubricants

Company:
No.:
Date:
used cooling lubricant

size to be checked	Inspection methods	Inspection intervals	Procedure and comment
noticeable changes	Appearance, odour	daily	Find and rectify causes, e.g. skim off oil, check filter, ventilate cooling lubricant system
pH value	Laboratory techniques electrometric with pH meter (DIN 51369) Local measurement method: with pH paper (Special indicators with suitable measuring range)	weekly 1)	if pH value decreases > 0.5 based on initial filing: Measures in accordance manufacturer's recommendations > 1.0 based on initial filing: Replace cooling lubricant, clean cooling lubricant circulation system
Usage concentration	Manual refractometer	weekly 1)	Method results in incorrect values with tramp oil content
Base reserve	Acid titration in accordance with Manufacturer's recommendation	as required	Method is independent of tramp oil content
Nitrite content	Test sticks method or laboratory method	weekly 1)	> 20 mg/L nitrite: Replace cooling lubricant or part or inhibiting additives; otherwise NDELA (N-nitrosodiethanolamine) in the cooling lubricant system and in the air must be determined > 5 mg/L NDELA in the cooling lubricant system: Replacement, clean and disinfect cooling lubricant circulation system, find nitrite source and, if possible, rectify.
Nitrate/nitrite content of the preparation water, if this is not removed from the public grid	Test sticks method or laboratory method	as required	Use water from the public grid if there is water from the pubic grid has > 50 mg/l nitrate: Inform the waterworks

1) The specified inspection intervals (frequency) are based on continuous operation. Other operational conditions can result in other inspection intervals; exceptions are possible in accordance with Sections 4.4 and 4.10 of the TGS 611.

Editor:

Signature:

7 Ersatzteile - Spare parts

7.1 Ersatzteilbestellung - *Ordering spare parts*

Bitte geben Sie folgendes an - *Please indicate the following :*

- Seriennummer - *Serial No.*
- Maschinenbezeichnung - *Machines name*
- Herstellungsdatum - *Date of manufacture*
- Artikelnummer - *Article no.*

Die Artikelnummer befindet sich in der Ersatzteilliste. *The article no. is located in the spare parts list.* Die Seriennummer befindet sich am Typschild. *The serial no. is on the rating plate.*

7.2 Hotline Ersatzteile - Spare parts Hotline

☎

+49 (0) 951-96555 -118
ersatzteile@stuermer-maschinen.de

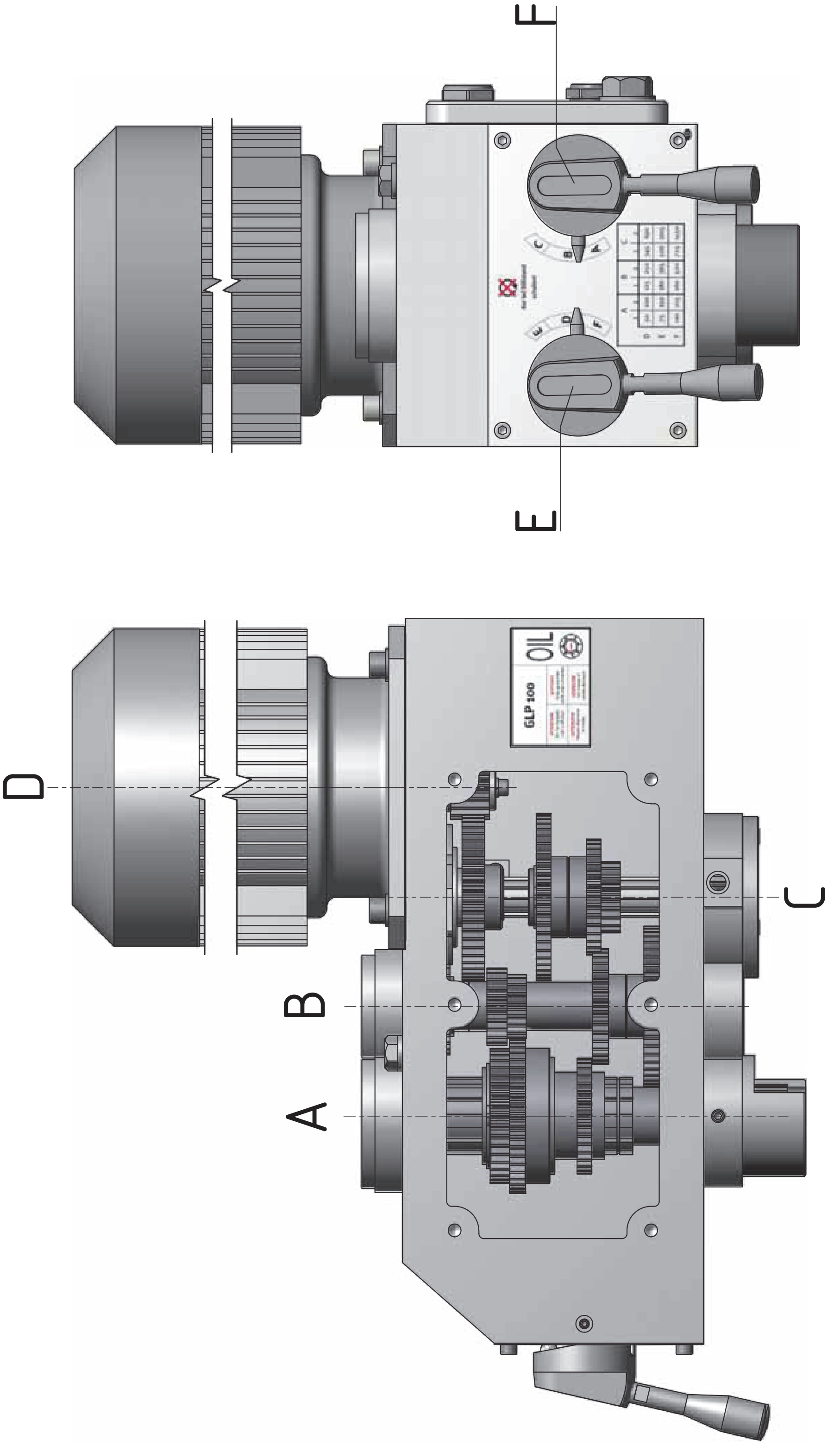
7.3 Service Hotline

☎

+49 (0) 951-96555 -100
service@stuermer-maschinen.de

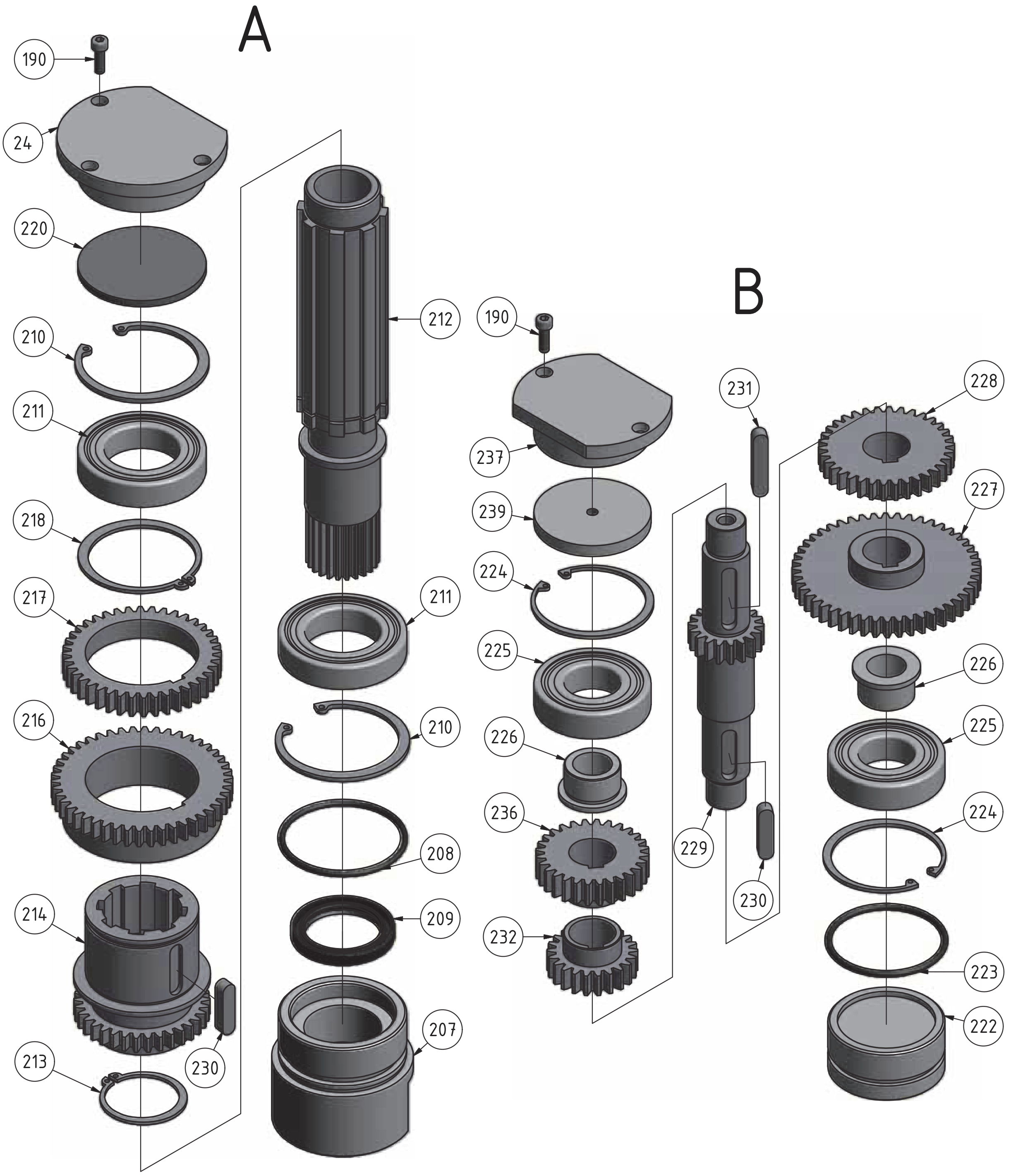
7.4 Ersatzteilzeichnungen - Spare part drawings

A Getriebe Bohrspindel - Gear box main spindel



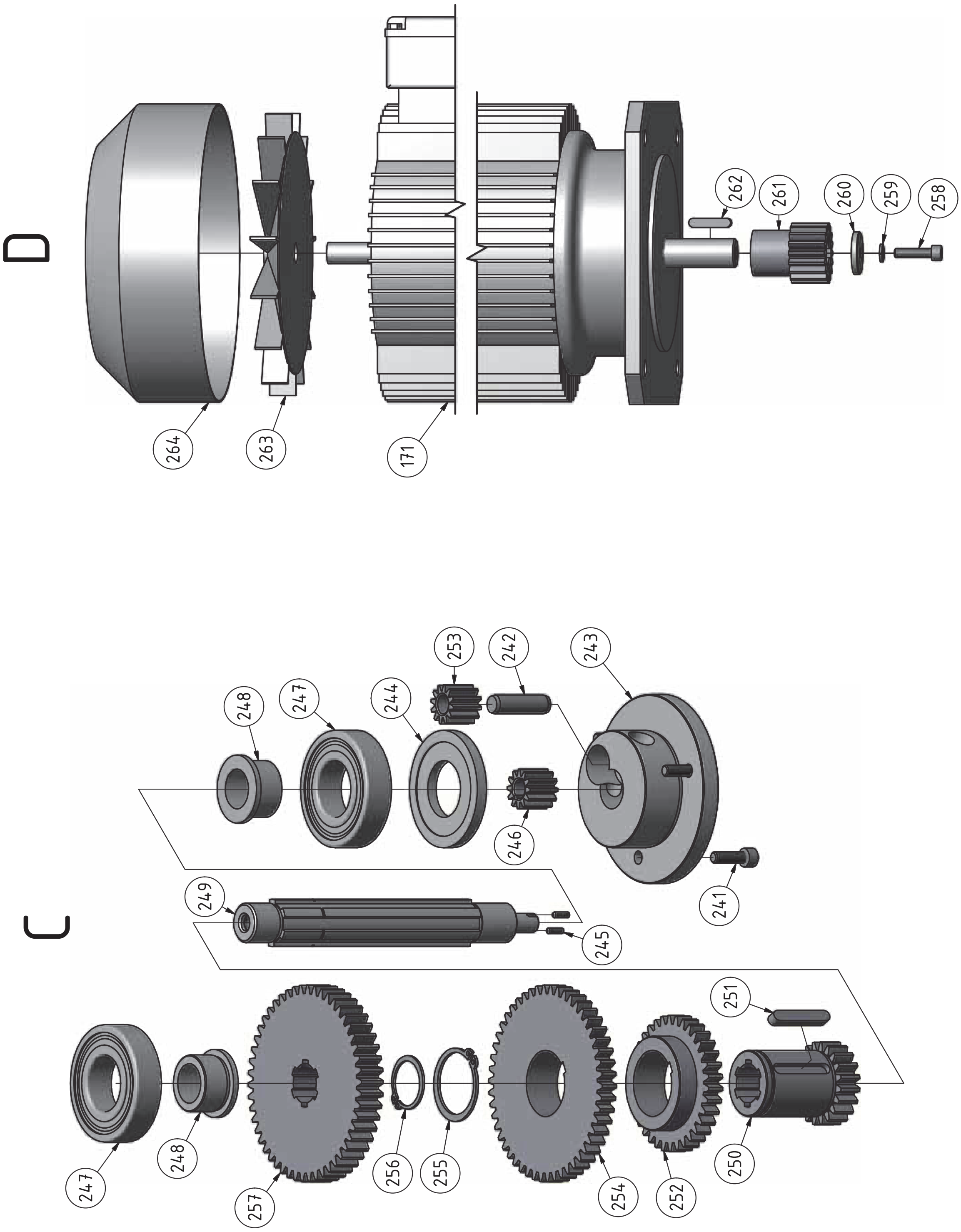
Img.7-1: Getriebe Bohrspindel - Gear box main spindel

B Getriebe Bohrspindel 1 von 4 - Gear box main spindel 1 of 4



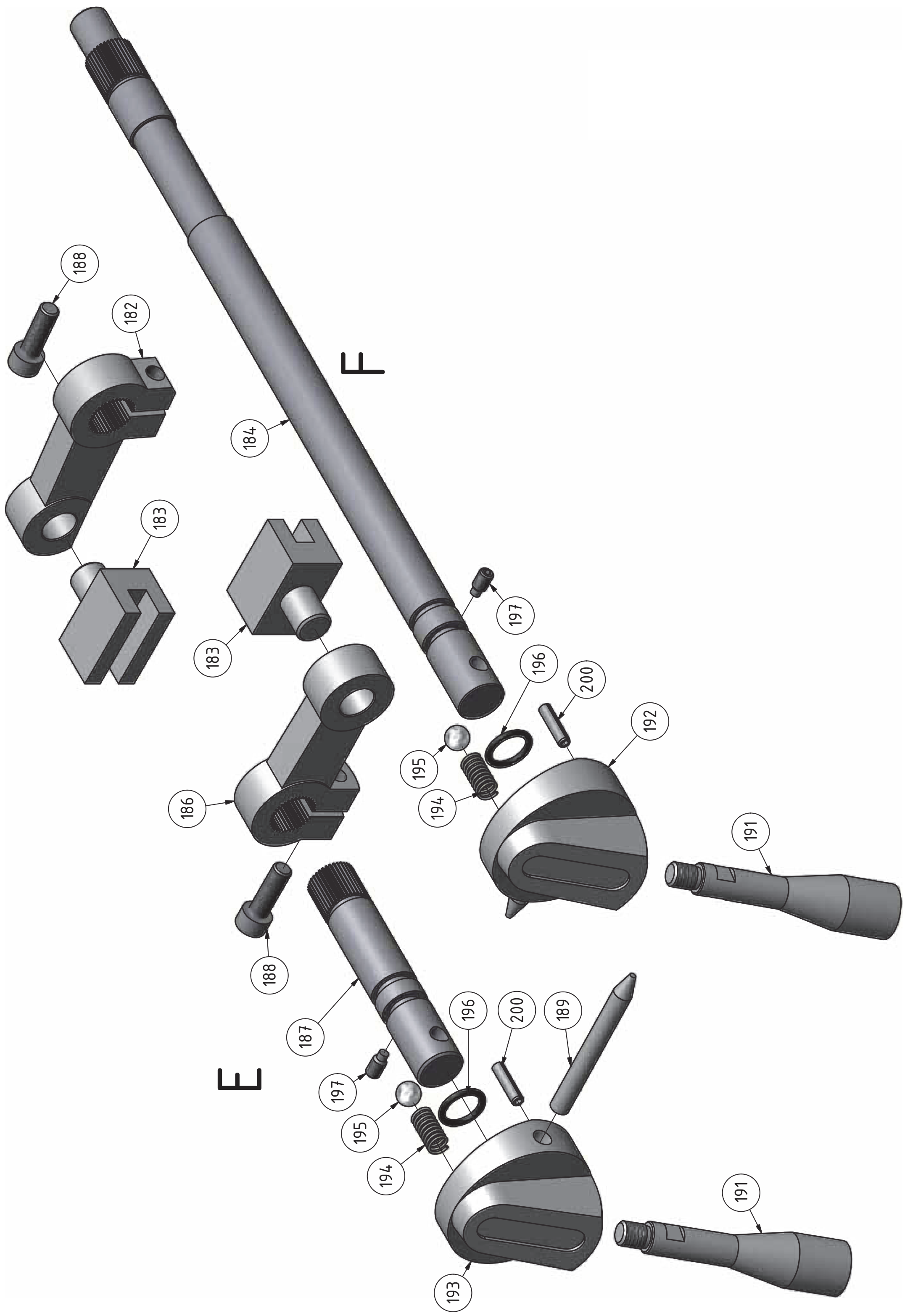
Img.7-2: Getriebe Bohrspindel 1 von 4 - Gear box main spindel 1 von 4

C Getriebe Bohrspindel 2 von 4 - Gear box main spindel 2 of 4



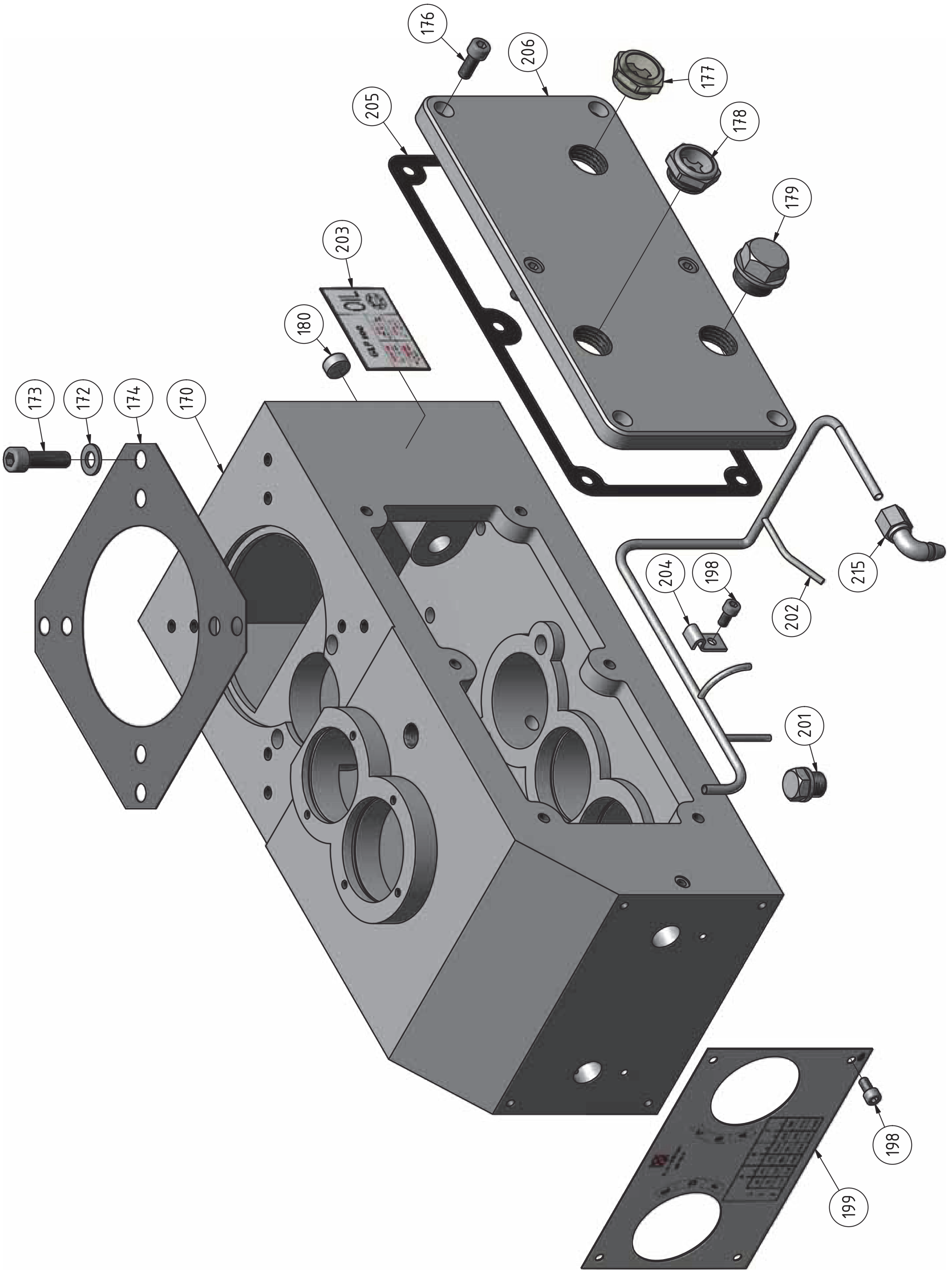
Img.7-3: Getriebe Bohrspindel 2 von 4 - Gear box main spindel 2 von 4

D Getriebe Bohrspindel 3 von 4 - Gear box main spindel 3 of 4



Img. 7-4: Getriebe Bohrspindel 3 von 4 - Gear box main spindel 3 von 4

E Getriebe Bohrspindel 4 von 4 - Gear box main spindel 4 of 4



Img.7-5: Getriebe Bohrspindel 4 von 4 - Gear box main spindel 4 von 4

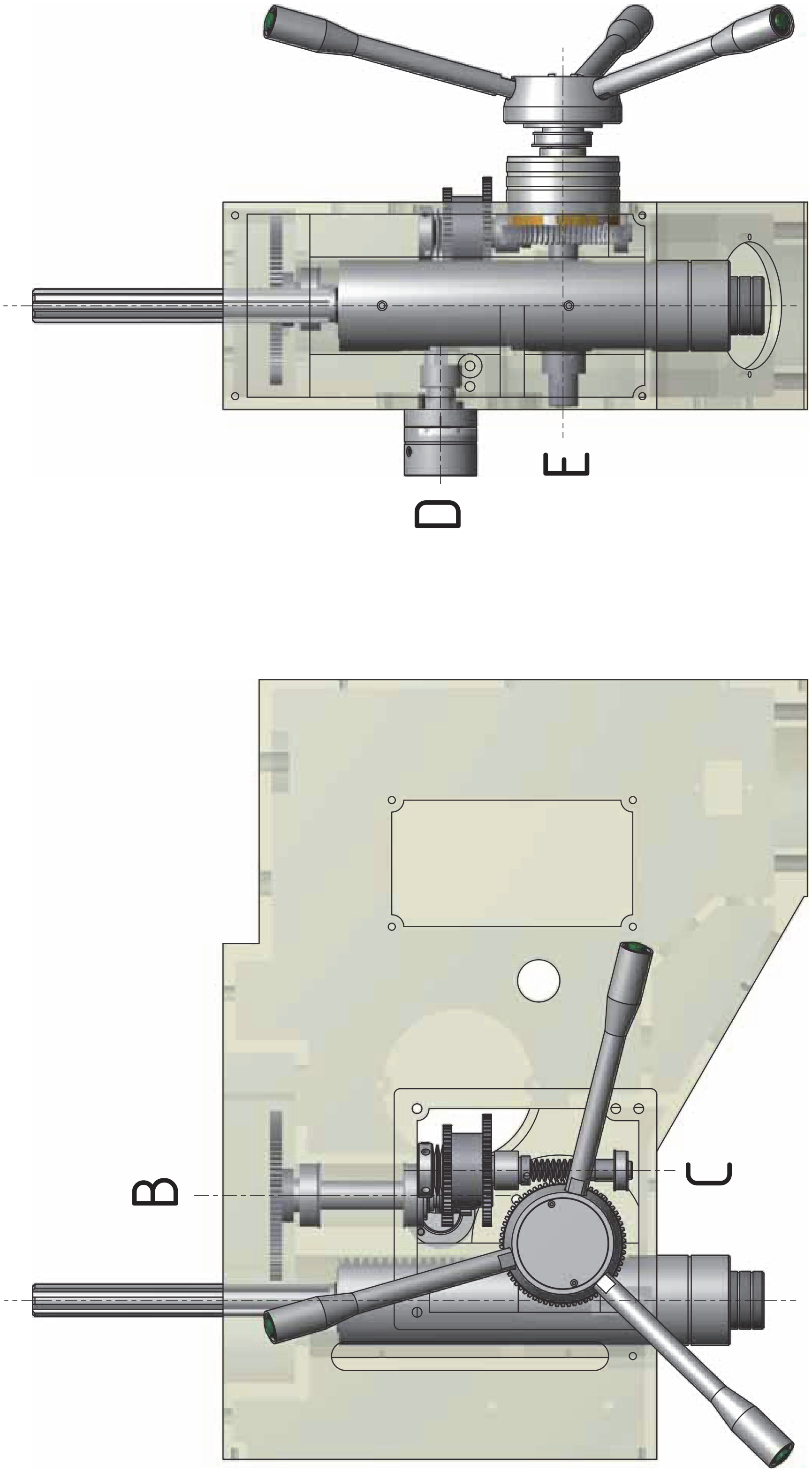
B40 GSM - Ersatzteilliste Getriebe Bohrspindel - Spare part list gear box main spindel

Pos.	Bezeichnung	Description	Menge Qty.	Grösse Size	Artikelnummer Item no.
170	Gehäuse	Gear housing	1	SET	03334403180CPL
171	Motor	Motor	1		03334400171
172	Scheibe	Washer	4	DIN 125 - A 10,5	
173	Schraube	Screw	4	GB 70-85 - M10 x 35	
174	Flachdichtung	Gasket	1		03334400174
176	Innensechskantschraube	Socket head screw	6	GB 70-85 - M8 x 20	
177	Ölschauglas	Oil sight glass	1		03334400177
178	Ölschauglas	Oil sight glass	2		03334400178
179	Ablasschraube	Drain plug	1		
180	Stöpsel	Plug	1		
182	Verschiebehebel	Shifting lever	1		03334400182
183	Verschiebegabel	Shifting fork	2		03334400183
184	Welle	Shaft	1		03334400184
186	Verschiebehebel	Shifting lever	1		
187	Welle	Shaft	1		03334400187
188	Innensechskantschraube	Socket head screw	2	GB 70-85 - M8 x 25	
189	Stift	Pin	2		03334400189
190	Innensechskantschraube	Socket head screw	4	GB70-85/M5x16	
191	Hebel	Lever	2		03334400191
192	Aufnahme	Hub	1		03334400192
193	Aufnahme	Hub	1		03334400193
194	Feder	Spring	2		03334400194
195	Stahlkugel	Steel ball	2	10mm	042KU10
196	O-Ring	O-ring	2	DIN 3771 - 15 x 2,65	03334400196
197	Gewindestift	Grub screw	2	ISO 4028/M6x12	
198	Innensechskantschraube	Socket head screw	5	GB 70-85 - M6 x 12	
199	Label	Label	1		03334400199
200	Stift	Pin	2	GB 879-86 - 5 x 20	
201	Belüftungsschraube	Vent screw	1		
202	Schmierungsrohr	Lubrication tube	1		
204	Platte	Plate	1		
205	Dichtung	Gasket	1		03334400205
206	Getriebedeckel	Cover	1		03334400206
207	Flansch	Flange	1		03334400207
208	O-Ring	O-ring	1	DIN 3771 - 61,5 x 3,55	03334400208
209	Wellendichtring	Rotary shaft seal	1	DIN 3760 - 40 x 55 x 7	04140557
210	Sicherungsring	Retaining ring	2	DIN 472 - 68 x 2,5	042SR68I
211	Kugellager	Ball bearing	2	6008-2RZ	0406008R
212	Welle	Shaft	1		03334400212
213	Sicherungsring	Retaining ring	1	DIN 471 - 42x1,75	042SR42I
214	Zahnrad	Gear	1		03334400214
215	Adapter	Adapter	1		
216	Zahnrad	Gear	1		03334400216
217	Zahnrad	Gear	1		03334400217
218	Sicherungsring	Retaining ring	1	DIN 471 - 60x2	042SR60W
220	Deckel	Cover	1		
221	Deckel	Cover	1		
222	Deckel	Cover	1		03334400222
223	O-Ring	O-Ring	1	DIN 3771 - 58 x 3,55	03334400223
224	Sicherungsring	Retaining ring	2	DIN 472 - 62x2	042SR62I
225	Kugellager	Bearing ring	2	6206-2RZ	0406206R
226	Hülse	Bushing	4		03334400226
227	Zahnrad	Gear	1		03334400227
228	Zahnrad	Gear	1		03334400228
229	Welle	Shaft	1		03334400229
230	Passfeder	Fitting key	2	DIN 6885 - A 8 x 7 x 32	042P8735
231	Passfeder	Fitting key	1	DIN 6885 - A 8 x 7 x 40	042P8740
232	Zahnrad	Gear	1		03334400232
236	Zahnrad	Gear	1		03334400236
237	Abdeckung	Cover			
239	Deckel	Cover	1		03334400239
241	Innensechskantschrauben	Socket head screw	3	GB 70-85 - M6 x 20	03334400241
242	Zylinderstift	Straight pin	1		03334400242
243	Lagerdeckel	Bearing cover	1		03334400243
244	Ring	Ring	2		03334400244
245	Gewindestift	Grub screw	2	GB 80-85 - M3 x 10	03334400245
246	Zahnrad	Gear	1		03334400246
247	Kugellager	Ball bearing	2	6206-2RZ	0406206R
248	Hülse	Bushing	4		03334400248
249	Welle	Shaft	1		03334400249
250	Zahnrad	Gear	1		03334400250
251	Passfeder	Fitting key	1	DIN 6885 - A 6 x 6 x 36	03334400251

B40 GSM - Ersatzteilliste Getriebe Bohrspindel - Spare part list gear box main spindel

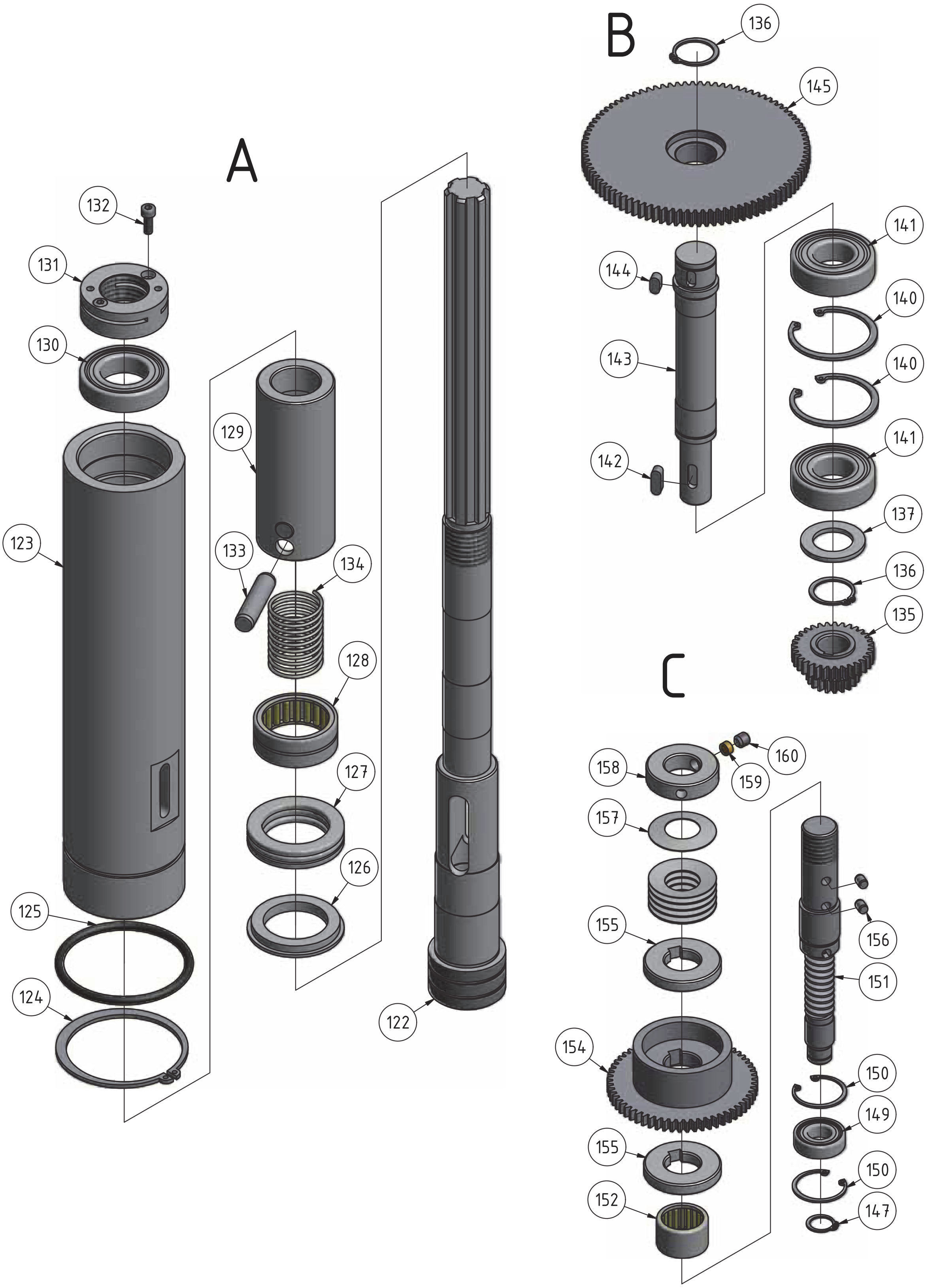
Pos.	Bezeichnung	Description	Menge Qty.	Grösse Size	Artikelnummer Item no.
252	Zahnrad	Gear	1		03334400252
253	Zahnrad	Gear	1		03334400253
254	Zahnrad	Gear	1		03334400254
255	Sicherungsring	Retaining ring	1	DIN 471 - 35x1,5	042SR35W
256	Sicherungsring	Retaining ring	1	DIN 471 - 25x1,2	042SR25W
257	Zahnrad	Gear	1		03334400257
258	Innensechskantschraube	Socket head screw	1	GB 70-85 - M6 x 25	03334400258
259	Federring	Spring ring	1	DIN 127 - A 6	03334400259
260	Scheibe	Washer	1		03334400260
261	Zahnrad	Gear	1		03334400261
262	Passfeder	Fitting key	1	DIN 6885 - A 6 x 6 x 28	042P6628
263	Motorlüfter	Motor fan	1	Innendurchmesser 23mm	03334400301
263	Motorlüfter	Motor fan	1	Innendurchmesser 19mm	03334400303
263	Motorlüfter	Motor fan	1	Innendurchmesser 28mm	03334400305
264	Motorlüfterdeckel	Motor fan cover	1		03334400302
0	Schutzschlauch Motorkabel	Protective pipe for motor cable	1		03334400304

F Vorschubgetriebe - Feed gear box



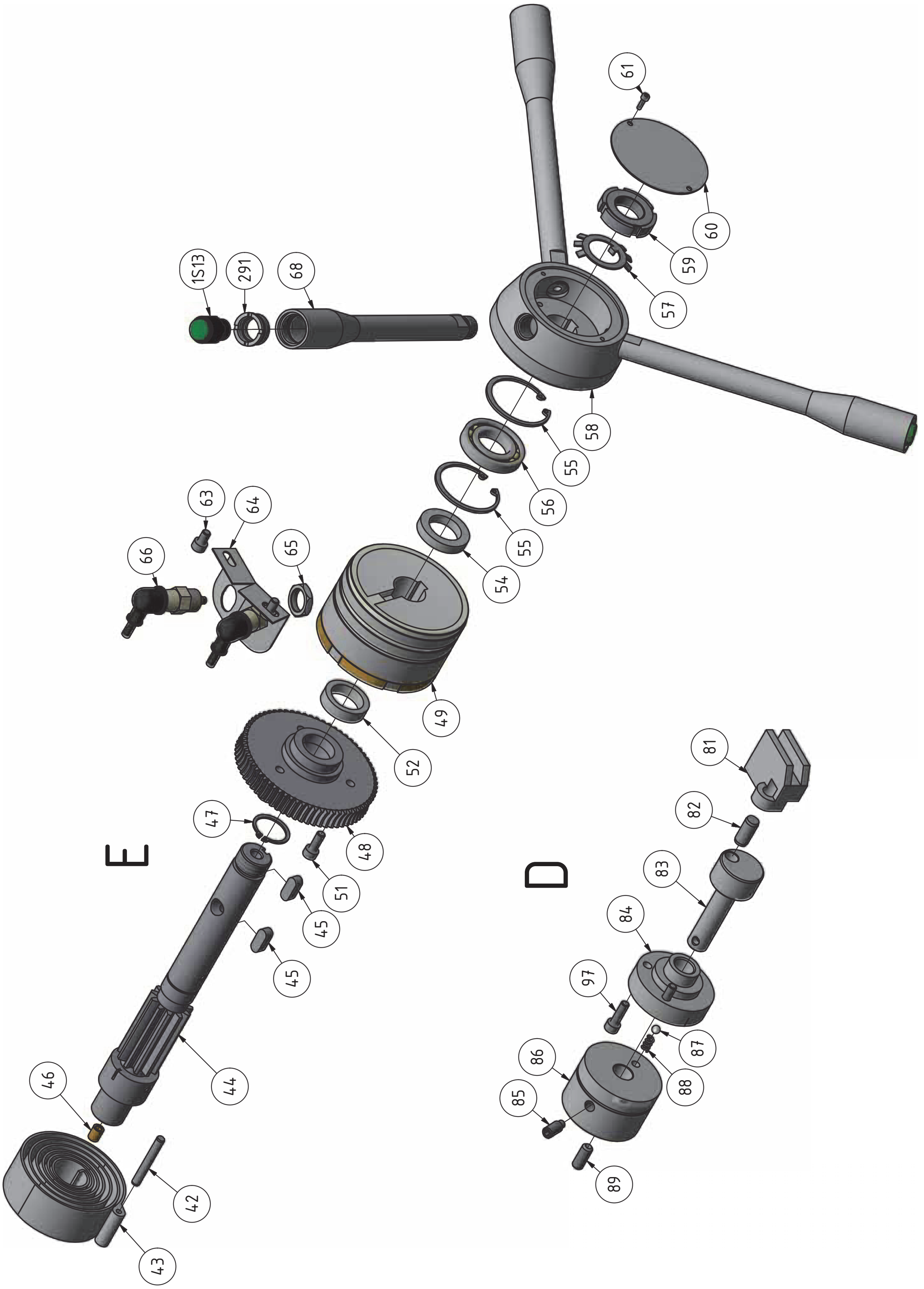
Img. 7-6: Vorschubgetriebe - Feed gear box

G Vorschubgetriebe 1 von 4 - Feed gear box 1 of 4



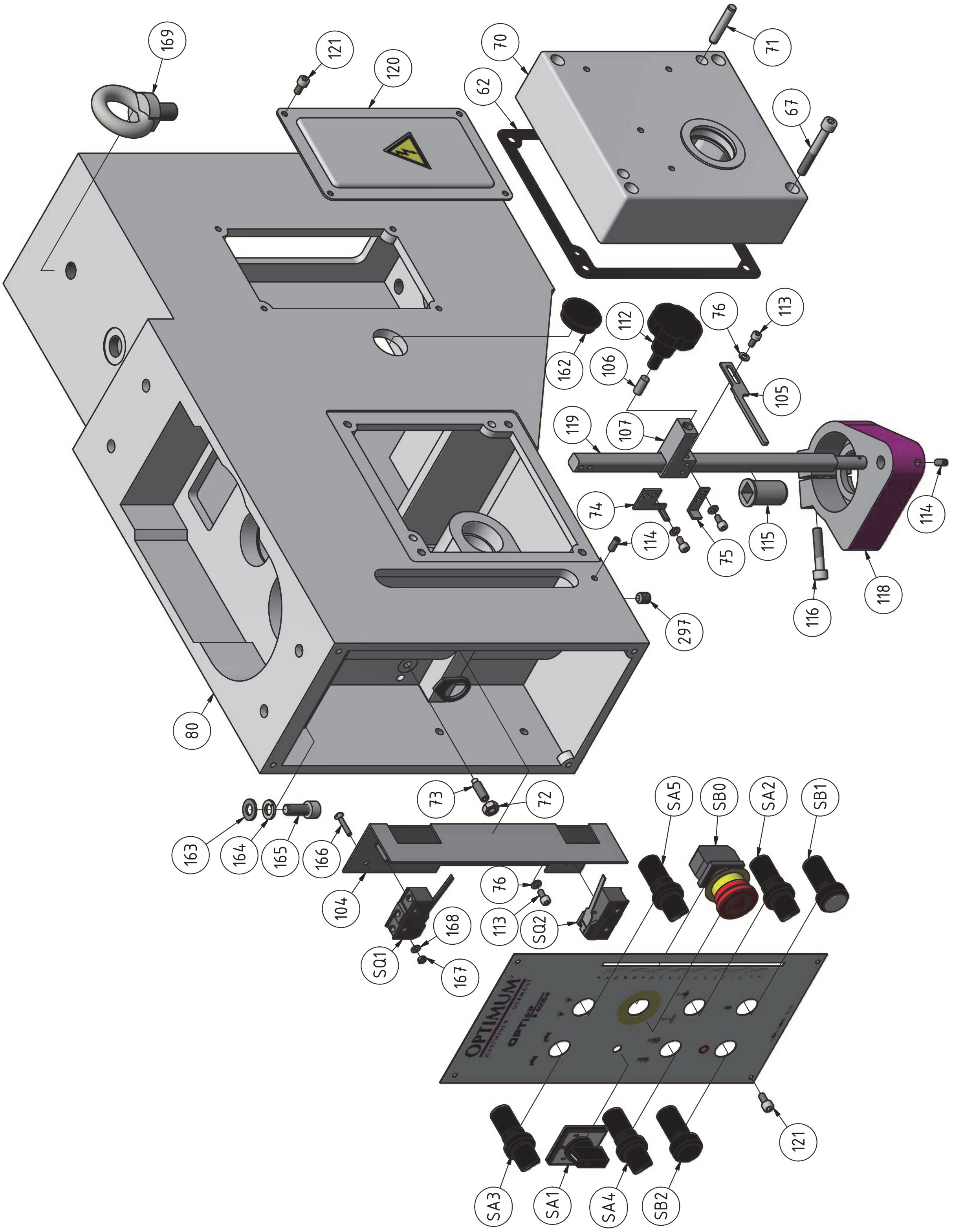
Img.7-7: Vorschubgetriebe 1 von 4 - Feed gear box 1 of 4

H Vorschubgetriebe 2 von 4 - Feed gear box 2 of 4



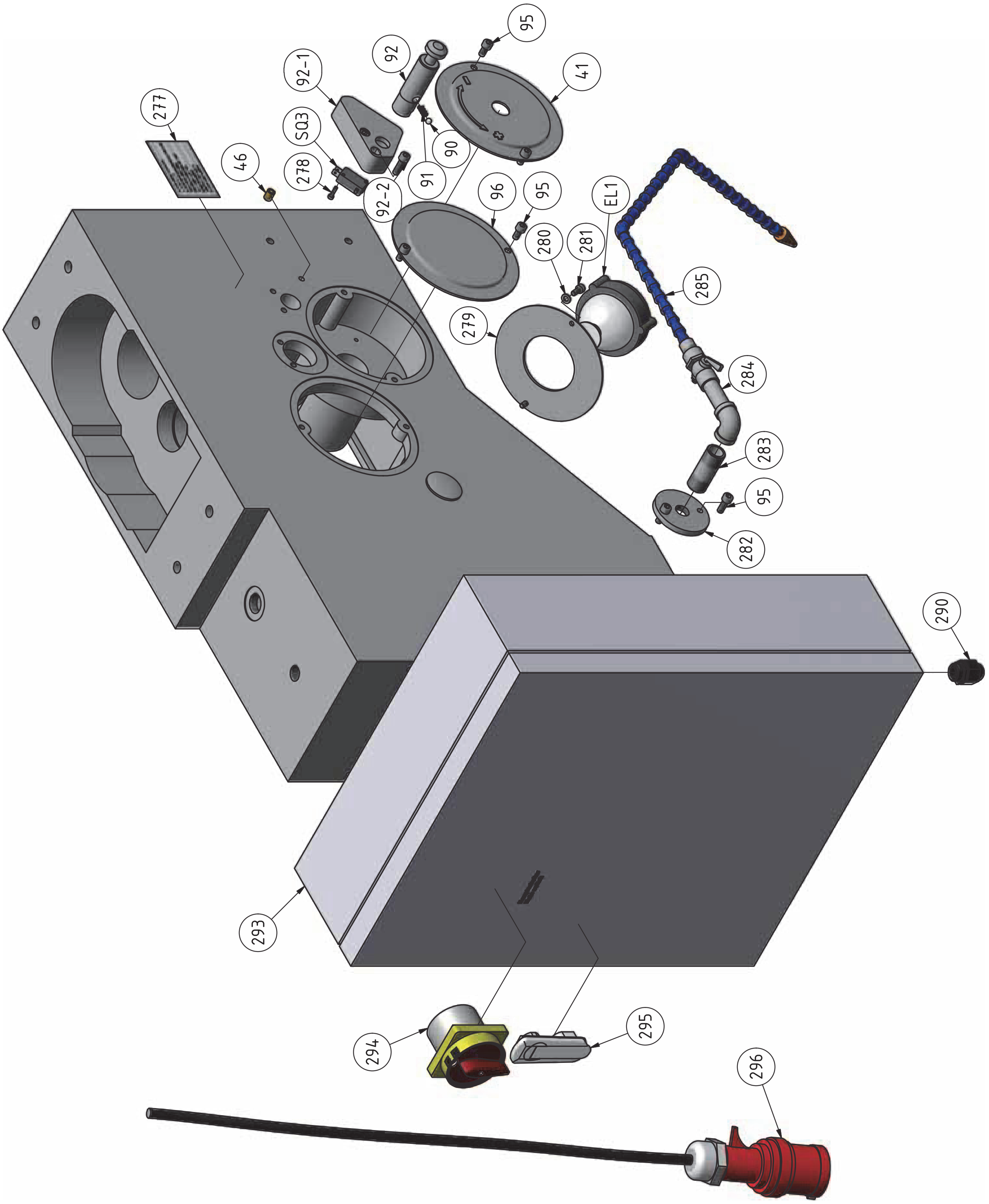
Img.7-8: Vorschubgetriebe 2 von 4 - Feed gear box 2 of 4

I Vorschubgetriebe 3 von 4 - Feed gear box 3 of 4



Img.7-9: Vorschubgetriebe 3 von 4 - Feed gear box 3 of 4

J Vorschubgetriebe 4 von 4 - Feed gear box 4 of 4



Img. 7-10: Vorschubgetriebe 4 von 4 - Feed gear box 4 of 4

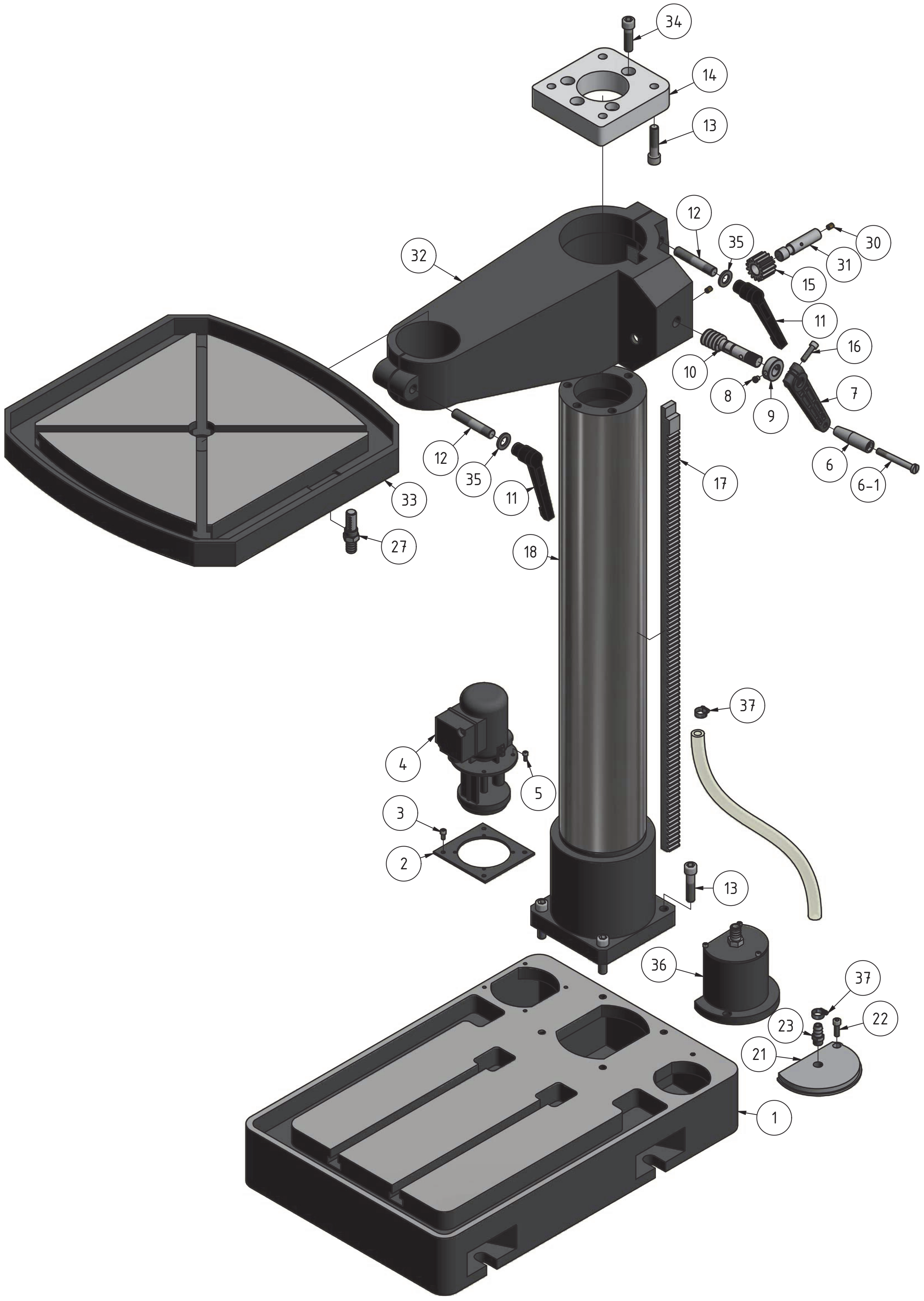
B40 GSM - Ersatzteilliste Vorschubgetriebe - Spare part list feed gear box

Pos.	Bezeichnung	Description	Menge Qty.	Grösse Size	Artikelnummer Item no.
41	Platte	Plate	1		0333440041
42	Zylinderstift	Straight pin	1	ISO 8734 - 6 x 45 - A	0333440042
43	Rückholfeder	Return spring	1	ab Bj. 03/2009	0333440043
43	Rückholfeder	Return spring	1	bis Bj. 02/2009	0333440043A
44	Schaftritzel	Pinion shaft	1	ab Bj. 03/2009	0333440044
44	Schaftritzel	Pinion shaft	1	bis Bj. 02/2009	0333440044A
45	Passfeder	Fitting key	2	DIN 6885 - A 8 x 7 x 20	0333440045
46	Schmiernippel	Lubrication cup	1		0340114
47	Sicherungsring	Retaining ring	3	DIN 471 - 25x1,2	042sr25w
48	Zahnrad	Gear	1		0333440048
49	Elektromagnetische Zahnhaltebremse mit Positionierung	Electromagnetic tooth retaining brake with positioning	1		03334400DT
50	Sicherungsringe für Bohrungen		2	DIN 472 - 32x1,2	042SR32W
51	Innensechskantschraube	Socket head screw	3	GB 70-85 - M6 x 16	
52	Ring	Ring	1		0333440052
54	Ring	Ring	1		0333440054
55	Sicherungsring	Retaining ring	2	DIN 472 - 47x1,75	042SR47I
56	Kugellager	Ball bearing	1	16005	04016005
57	Sicherungsblech	Safety plate	1		0333440057
58	Nabe	Hub	1	with M16 thread for spindle sleeve lever Older B40GSM can have M12, check first	0333440058
59	Nutmutter	Grooved nut	1	DIN 1804 - M24	0333440059
60	Platte	Plate	1		0333440060
61	Innensechskantschraube	Socket head screw	2	GB 70-85 - M3 x 10	
62	Dichtung	Gasket	1		0333440062
63	Innensechskantschraube	Socket head screw	2	GB 70-85 - M6 x 10	
64	Klammer	Clip	1		0333440064
65	Sechskantmutter	Hexagon nut	2		0333440065
66	Schleifkontakt	Sliding contact	2		0333440066
68	Pinolenhebel	Spindle sleeve lever	3	M16 thread Older B40GSM can have M12, check first	0333440068
69	Schalter	Switch	3		0333440069
70	Deckel	Cover	1		0333440070
71	Zylinderstift	Straight pin	2	ISO 8734 - 8 x 45 - A	
72	Sechskantmutter	Hexagon nut	1	ISO 4032 - M8	
73	Gewindestift	Grub screw	1	ISO 4028 - M8 x 25	
74	Tiefanschlag oben	Block high	1		0333440074
75	Tiefanschlag unten	Block low	1		0333440075
76	Scheibe	Washer	10	DIN 125 - A 5,3	
80	Bohrkopfgehäuse	Housing	1		
81	Verschiebegabel	Shifting fork	1		0333440081
82	Stift	Pin	1		0333440082
83	Verschiebhebel	Shifting lever	1		0333440083
84	Drehsupport	Handle	1		0333440084
85	Gewindestift	Grub screw	1	ISO 4028 - M8 x 20	
86	Drehgriff	Handle	1		0333440086
87	Kugel	Ball	1		
88	Feder	Spring	1		
89	Gewindestift	Grub screw	1	GB 80-85 - M8 x 20	
90	Stahlkugel	Steel ball	1	6	042KU06
91	Feder	Spring	2	0,8x7x12	0333440091
92	Sperrbolzen	Lockbolt	1		0333440092
92	Sperrbolzen	Lockbolt	1		0333440092A
92-1	Gehäuse	Housing	1		03334400921
92-2	Innensechskantschraube	Socket head screw	1	GB 70-85/M6x20	
95	Innensechskantschraube	Socket head screw	6	GB 70-85 - M6 x 12	
96	Platte	Plate	1		0333440096
104	Platte	Plate	1		
105	Zeiger	Pointer	1		03334400105
106	Stift	Pin	1		03334400106
107	Haltewinkel	Bracket	1		03334400107
112	Griff	Handle	1		03334400112
113	Innensechskantschraube	Socket head screw	8	GB 70-85 - M5 x 10	03334400113
114	Gewindestift	Grub screw	2	ISO 4027 - M6 x 16	03334400114
115	Stellring	Collar	1		03334400115
116	Innensechskantschraube	Socket head screw	2	GB 70-85 - M8 x 40	

B40 GSM - Ersatzteilliste Vorschubgetriebe - Spare part list feed gear box

Pos.	Bezeichnung	Description	Menge Qty.	Grösse Size	Artikelnummer Item no.
118	Halter	Holder	1		03334400118
119	Welle	Shaft	1		03334400119
120	Deckel	Cover	1		03334400120
121	Innensechskantschrauben	Socket head screw	12	GB 70-85 - M6 x 12	
122	Spindel	Spindle	1		03334400122
123	Pinole	Pinole	1		03334400123
124	Sicherungsring	Retaining ring	1	DIN 471 - 75x2,5	042SR75W
125	O-Ring	O-Ring	1	DIN 3771 - 75 x 5,3	03334400125
126	Unterlegscheibe	Washer	1		03334400126
127	Axial-Rillenkugellager	Groove ball thrust bearing	1	51108	04051108
128	Nadellager	Needle bearing	1		040RNA4932
129	Hülse	Bushing	1		03334400129
130	Kugellager	Ball bearing	1	6006-2RZ	0406006R
131	Klemmmutter	Clamping nut	1		03334400131
132	Innensechskantschraube	Socket head screw	2	GB 70-85 - M5 x 14	
133	Zylinderstift	Straght pin	2	ISO 8734 - 12 x 50 - A	03334400133
134	Feder	Spring	1		03334400134
135	Zahnrad	Gear	1		03334400135
136	Sicherungsring	Retaining ring	3	DIN 471 - 25x1,2	042SR25W
137	Scheibe	Washer	1		03334400137
140	Sicherungsring	Retaining ring	2	DIN 472 - 52 x 2	042SR52W
141	Kugellager	Ball bearing	2	6205-2RSL	0406205R
142	Passfeder	Fitting key	1	DIN 6885 - A 6 x 6 x 18	042P6618
143	Welle	Shaft	1		03334400143
144	Passfeder	Fitting key	1	DIN 6885 - A 6 x 6 x 14	042P6614
145	Zahnrad	Gear	2		03334400145
147	Sicherungsring	Retaining ring	1	DIN 471 - 15x1	042SR15W
149	Kugellager	Ball bearing	1	6002-2Z	0406002R
150	Sicherungsring	Retaining ring	2	DIN 472 - 32x1,2	042SR32W
151	Getriebeschnecke	Worm gear	1		03334400151
152	Nadellager	Needle bearing	1	HK 2520	040HK2520
154	Zahnrad	Gear	1		03334400154
155	Stellring	Collar	2		03334400153
156	Zylinderstift	Straght pin	2	ISO 8734 - 6 x 14 - A	03334400156
157	Federscheibe	Spring washer	10		03334400157
158	Klemmmutter	Clamping nut	1		03334400158
159	Stift	Pin	1		03334400159
160	Gewindestift	Grub screw	1	GB 80-85 - M8 x 8	
162	Stopfen	Plug	2		03334400169
163	Scheibe	Washer	4	DIN 125 - A 10,5	
164	Federring	Spring ring	4	DIN 127 - A 10	
165	Innensechskantschraube	Socket head screw	4	GB 70-85 - M10 x 25	
166	Senkkopfschraube	Counter sunk screw	4	ISO 2009 - M4 x 25	
167	Sechskantmutter	Hexagon nut	4	ISO 4032 - M4	
168	Scheibe	Washer	4	DIN 125 - A 4,3	
169	Ringschraube	Ring bolt	1	DIN 580 - M16 x 27	
278	Innensechskantschraube	Socket head screw	2	GB 70-85 - M3 x 12	
279	Aufnahme	Collet	1		03334400279
280	Scheibe	Washer	10	DIN 125 - A 5,3	
281	Innensechskantschraube	Socket head screw	2	GB 70-85 - M5 x 12	
282	Flansch	Flange	1		
283	Verbindungsstück	Adapter	1		03334400283
284	Dosierhahn/ Kühlmittel	Lever tap/coolant	1		03334400284
285	Kühlmittelschlauch	Coolant hose	1		0340316
290	Zugentlaster	Bushing	1		
291	Klemmschraube	Clamping screw	3		03334400291
293	Schaltkasten alt bis 2012	Electric box old to 2012	1		
293	Schaltkasten neu ab 2012	Elektik box neu from 2012	1		03334400293
294	Hauptschalter	Main switch	1		03334400294
295	Schloss	Lock	1		03334400295
296	Stecker 400 V	Connector 400V	1		
297	Verschlussschraube	Plug screw	1		03334400108
0	Pinole kpl.	Pinole cpl.			03334400123CPL

K Säule und Bohrtisch - Column and drilling table

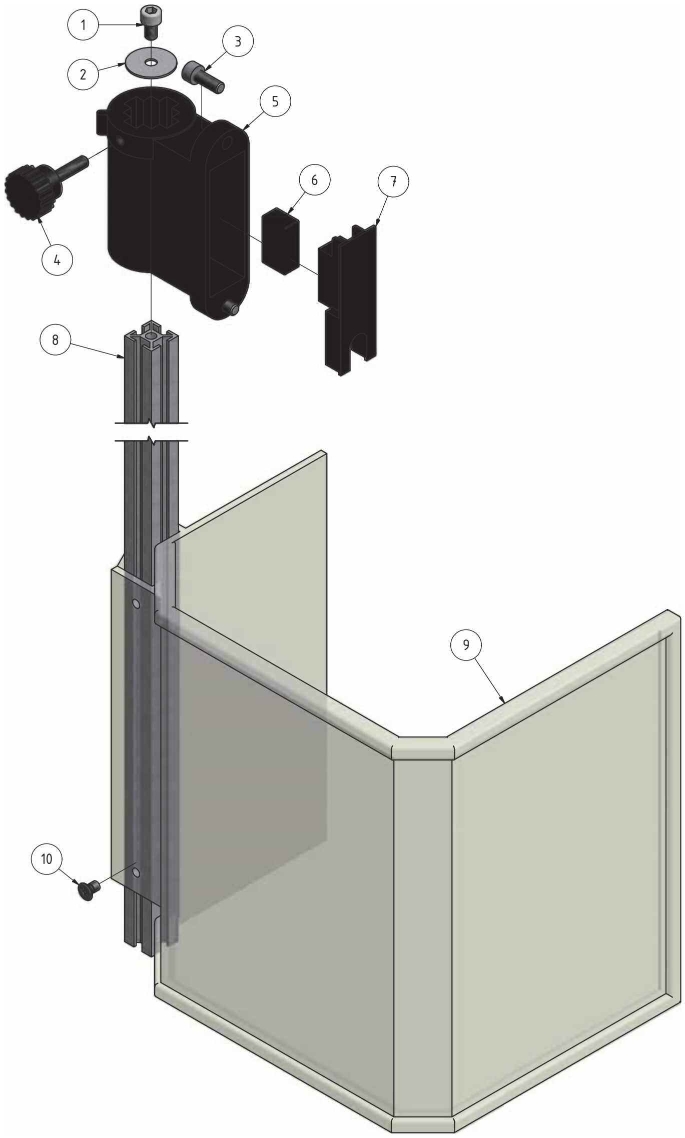


Img.7-11: Säule und Bohrtisch - Column and drilling table

B40 GSM - Ersatzteilliste Säule und Bohrtisch - Spare part list column and drilling table

Pos.	Bezeichnung	Description	Menge Qty.	Grösse Size	Artikelnummer Item no.
1	Maschinenfuß	Machine base	1		0333440001
2	Befestigungsplatte	Plate	1		0333440002
3	Innensechskantschrauben	Hexagon socket screws	4	GB 70-85 - M6 x 12	
4	Kühlmittelpumpe	Coolant pump	1		0333440004
5	Innensechskantschraube	Socket head screw	4	GB 70-85 - M5 x 12	
6	Handgriff	handle	1		0333440006
6-1	Schraube	Screw	1		
7	Hebel	Lever	1		0333440007
8	Gewindestift	Grub screw	2	GB 79-85 - M10 x 10	0300820134
9	Klemmring	Clamping ring	1		0333440009
10	Antriebsschnecke	Worm drive	1		0333440010
11	Klemmhebel	Clamping lever	3		0333440011
12	Gewindestange	Handle shaft	3		0333440012
13	Innensechskantschraube	Socket head screw	2	GB 70-85 - M14 x 60	
14	Platte	Plate	1		
15	Zahnrad	Gear	1		0333440015
16	Innensechskantschraube	Socket head screw	1	GB 70-85 - M8 x 30	
17	Zahnstange	Rack	1		0333440017
18	Bohrsäule	Column	1		0333440018
20	Innensechskantschraube	Socket head screw	8	GB 70-85 - M14 x 60	
21	Abdeckplatte	Cover plate	1		0333440021
22	Innensechskantschraube	Socket head screw	1	GB 70-85 - M8 x 25	
23	Reduzier	Reducing nipple	1		0333440023
25	Flexibler Schlauch	Flexible tube	1	16x1,5x1300	0333440025
27	Verschraubung	Fitting	1		
30	Schmiernippel	Oil cup	2		
31	Welle	Shaft	1		0333440031
32	Bohrtischträger	Support	1		0333440032
33	Bohrtisch	Table	1		0333440033
34	Innensechskantschraube	Socket head screw	4	GB 70-85 - M14 x 50	
35	Scheibe	Washer	3	DIN 125 - A 17	0333440035
36	Kühlmittelfilter	Coolant pump filter	1		03020285304
37	Schlauchbinder	Hose fitting	2		
0	Zubehör kpl.	Accesory box cpl.			0333440000

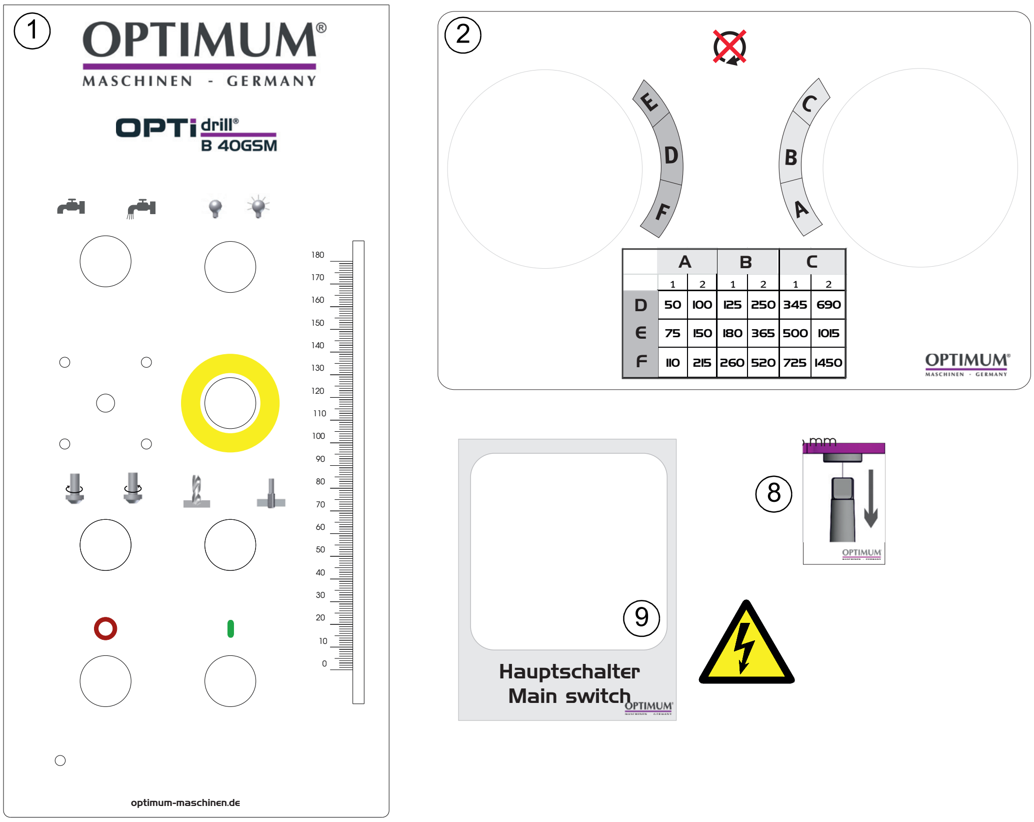
L Bohrfutterschutz - Drilling chuck protection



Img. 7-12: Bohrfutterschutz - Drilling chuck protection

B40 GSM - Ersatzteilliste Bohrfutterschutz- Spare part list drilling chuck protection					
Pos.	**Bezeichnung**	**Description**	**Menge** **Qty.**	**Grösse** **Size**	**Artikelnummer** **Item no.**
1	Innensechskantschraube	Socket head screw	1	GB 70-85 - M6 x 10	
2	Scheibe	Washer	1		
3	Innensechskantschraube	Socket head screw	2	GB 70-85 - M6 x 16	
4	Rändelschraube	Knurled screw	1		03003171208
5	Halterung komplett	Fixture cpl.	1		0302024149CPL
6	Mikroschalter	Microswitch	1		030031712018V2
7	Platte	Plate	1		030031712019
8	Alu- Profil	Aluminium profile	1	19x19x450 mm	0302130381
9	Bohrfutterschutz kpl.	Drill chuck protection kpl.	1		03334403170
10	Schraube	Screw	2	GB819-85/M5x8	

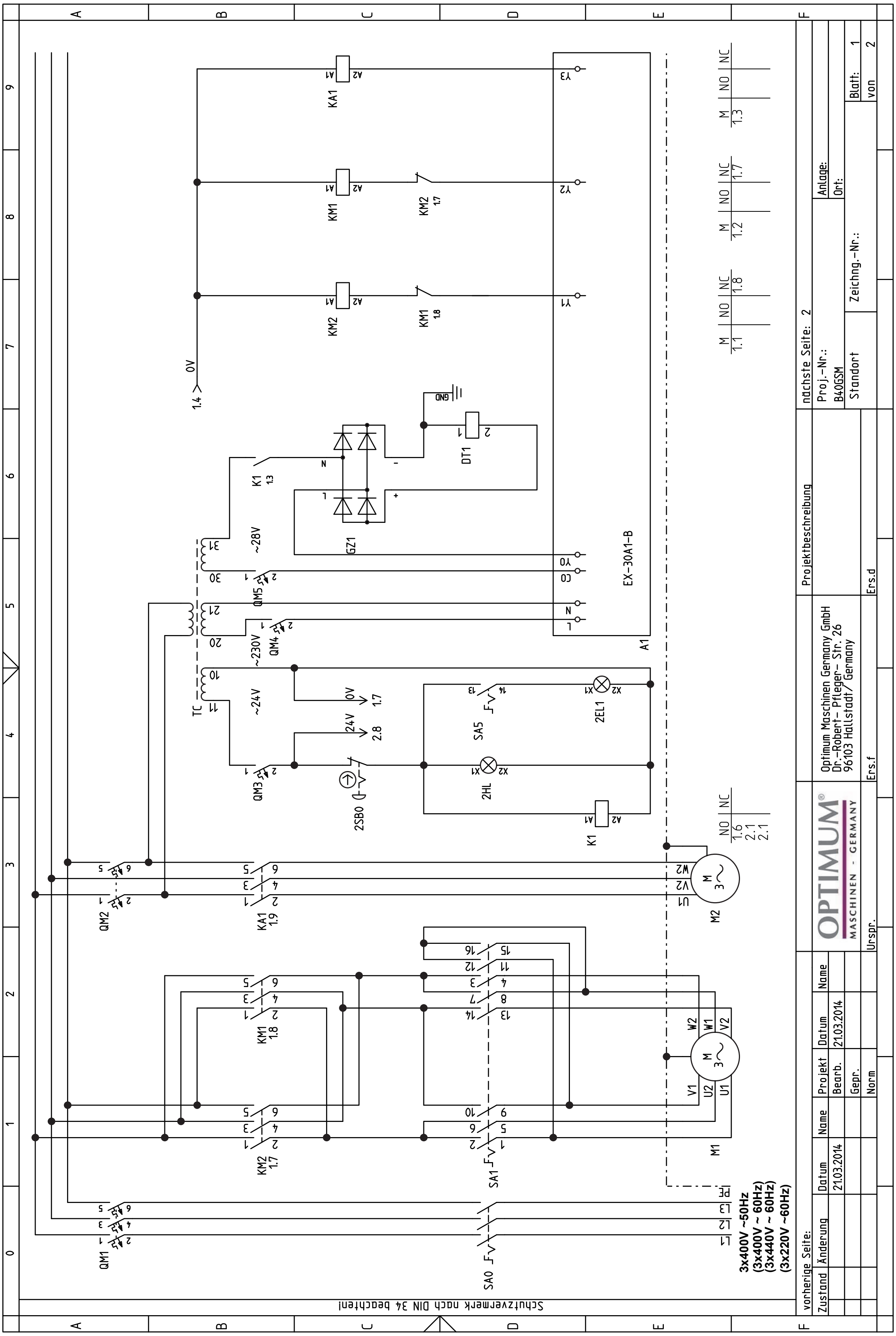
M Maschinenschilder - Machine labels



Img. 7-13: Maschinenschilder - Machine labels

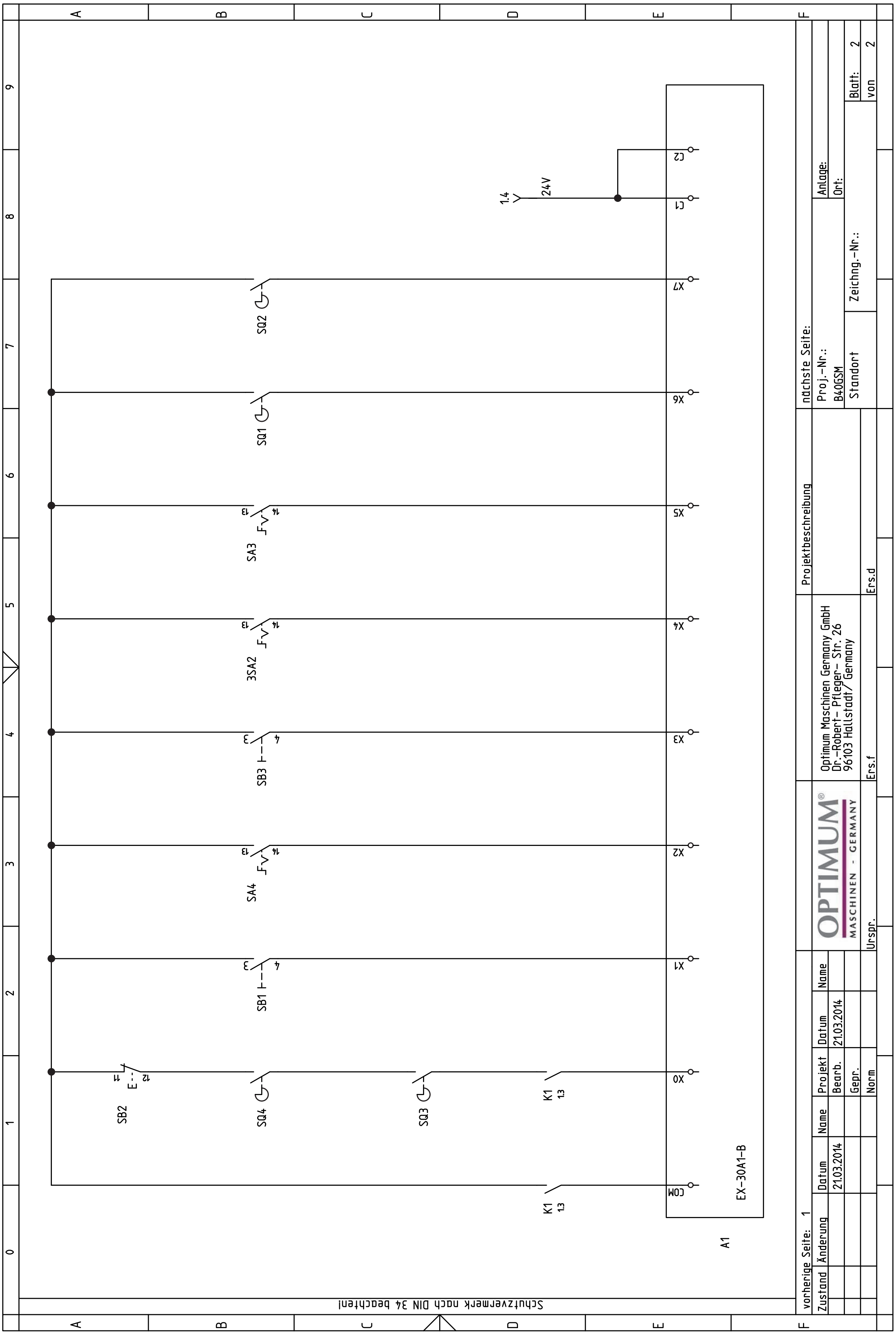
B40 GSM - Maschinenschilder - Machine labels					
Pos.	**Bezeichnung**	**Description**	**Menge Qty.**	**Grösse Size**	**Artikelnummer Item no.**
1	Frontschild	Front label	1		
2	Getriebeschild	Gear box label	1		03334400199
8	Austreiber	Drill drift	1		
9	Schild Hauptschalter	Main switch label	1		

7.5 Schaltplan - Wiring diagram 1 - 2



Img.7-14: Schaltplan - Wiring diagram

7.6 Schaltplan - Wiring diagram 2 - 2



Img. 7-15: Schaltplan - Wiring diagram

B40 GSM - Ersatzteilliste Elektrik- Spare part list electric

Pos.	Bezeichnung	Description	Menge Qty.	Grösse Size	Artikelnummer Item no.
DT1	Elektromagnet	Solenoid	1	DLY0-10A	03334400DT
GZ1	Gleichrichter	Rectifier package	1	KBPC10-10	
M1	Antriebsmotor	Drive motor	1	YD100L-4/8-1,5/ 0,85kW	03334400171
M2	Motor Kühlmittelpumpe	Coolant pump motor	1	AYB 12	
QM1	Sicherungsautomat	Automatik fuse	1	DZ541-63 D6/3P	
QM2	Sicherungsautomat	Automatik fuse	1	DZ541-63 D1/2P	
QM3	Sicherungsautomat	Automatik fuse	1	DZ451-63 C3/P1	
QM4	Sicherungsautomat	Automatik fuse	1	D/451-63 C1/1P	
QM5	Sicherungsautomat	Automatik fuse	1	D/451-63 C1/1P	
SA0	Hauptschalter	Main switch	1	LW8GS-25/3000-A	03334400294
TC	Transformator	Transformer	1	KBK5-100 400V/24V, 28V,220V	0460045
SA1	Stufenschalter Motor	Step switch motor	1	LW8PS-20/4D503	03334400SA
EL1	Maschinenbeleuchtung	Machine lamp	1	JC34A/ 50W-24V	03334400EL1
HL	Betriebskontrollleuchte	Control light	1	MP1-11G-MCBH	
K1	Relais Steuerung	Relay control	1	HH54PL/AC24V	03334400K1
SB0	Not-Halt Schalter	Emergency stop button	1	MPET3-10R	03334400SB0
KA1	Motorschütz Kühlmittelpumpe	Coolant pump contactor	1	3TH8040/24V/50Hz	0460022
KM1	Motorschütz Antriebsmotor	Driver motor contactor	1	3TB4122/24V/50Hz	0460020
KM2	Motorschütz Antriebsmotor	Driver motor contactor	1	3TB4122/24V/50Hz	0460020
SA2	Schalter Betriebsart	Operating mode switch	1	C2SS1-10B-10	03334400SA2
SA3	Schalter Kühlmittelpumpe	Coolant pump switch	1	S2SS1-10B-10	03034503SA1
SA4	Drehrichtungsschalter	Change-over switch	1	C2SS1-10B-10	03334403SB2
SA5	Schalter Maschinenbeleuchtung	Machine lamp switch	1	C2SS1-10B-10	03034503SA1
SB1	Taster "Ein"	Button On	1	MP1-11G-MCBH	03334403SB1
SB2	Taster "Aus"	Button Off	1	CP1-10R-01	0460001
SB3	Taster Vorschub	Rapid speed button	1	LAS1-A	
SQ1	Endschalter "Obere Stellung"	End switch high	1	LWx5-11N1	
SQ2	Endschalter "Untere Stellung"	End switch low	1	LWx5-11N1	
SQ3	Schalter Automatischer Austreiber	Automatic drift switch	1	LXW16-5/1C2	
SQ4	Sicherheitsschalter "Bohrfutterschutz"	Drill chuck safety switch	1	LXW16-5/1C2	
A1	PLC Steuerung	PLC Control	1	PLC/EX-30A1-B	03334400PLC
0	Lampe kpl.	Lamp compl.	1		03334400EL1
0	Ersatzleuchtmittel	Spare lamp	1		0344260

Schmierstoffe Lubricant Lubrifiant	Viskosität Viskosity Viscosité ISO VG DIN 51519 mm²/s (cSt)	Kennzeichnung nach DIN 51502	ARAL	BP	Esso	KLÜBER LUBRICATION	Mobil		TEXACO
Getriebeöl Gear oil Huile de réducteur	VG 680	CLP 680	Aral Degol BG 680	BP Energol GR-XP 680	SPARTAN EP 680	Klüberoil GEM 1-680	Mobilgear 636	Shell Omala S2 GX 680	Meropa 680
	VG 460	CLP 460	Aral Degol BG 460	BP Energol GR-XP 460	SPARTAN EP 460	Klüberoil GEM 1-460	Mobilgear 634	Shell Omala S2 GX 460	Meropa 460
	VG 320	CLP 320	Aral Degol BG 320	BP Energol GR-XP 320	SPARTAN EP 320	Klüberoil GEM 1-320	Mobilgear 632	Shell Omala S2 GX 320	Meropa 320
	VG 220	CLP 220	Aral Degol BG 220	BP Energol GR-XP 220	SPARTAN EP 220	Klüberoil GEM 1-220	Mobilgear 630	Shell Omala S2 GX 220	Meropa 220
	VG 150	CLP 150	Aral Degol BG 150	BP Energol GR-XP 150	SPARTAN EP 150	Klüberoil GEM 1-150	Mobilgear 629	Shell Omala S2 GX 150	Meropa 150
	VG 100	CLP 100	Aral Degol BG 100	BP Energol GR-XP 100	SPARTAN EP 100	Klüberoil GEM 1-100	Mobilgear 627	Shell Omala S2 GX100	Meropa 100
	VG 68	CLP 68	Aral Degol BG 68	BP Energol GR-XP 68	SPARTAN EP 68	Klüberoil GEM 1-68	Mobilgear 626	Shell Omala S2 GX 68	Meropa 68
	VG 46	CLP 46	Aral Degol BG 46	BP Bartran 46	NUTO H 46 (HLP 46)	Klüberoil GEM 1-46	Mobil DTE 25	Shell Tellus S2 MX 46	Anubia EP 46
	VG 32	CLP 32	Aral Degol BG 32	BP Bartran 32	NUTO H 32 (HLP 32)	Klübersynth GEM 4- 32 N	Mobil DTE 24	Shell Tellus S2 MX 32	Anubia EP 32
Hydrauliköl Hydraulic oil Huile hydraulique	VG 32	CLP 32	Aral Vitam GF 32	BP Energol HLP HM 32	NUTO H 32 (HLP 32)	LAMORA HLP 32	Mobil Nuto HLP 32	Shell Tellus S2 M 32	Rando HD HLP 32
	VG 46	CLP 46	Aral Vitam GF 46	BP Energol HLP HM 46	NUTO H 46 (HLP 46)	LAMORA HLP 46	Mobil Nuto HLP 46	Shell Tellus S2 M 46	Rando HD HLP 46
Getriebefett Gear grease Graisse de réducteur		G 00 H-20	Aral FDP 00 (Na-verseift) Aralub MFL 00 (Li-verseift)	BP Energrease PR-EP 00	FIBRAX EP 370 (Na-verseift)	MICROLUB E GB 00	Mobilux EP 004	Shell Alvania GL 00 (Li-verseift)	Marfak 00

Spezialfette, wasserabweisend Special greases, water resistant Graisses spéciales, déperlant			Aral Aralub	Energrease PR 9143		ALTEMP Q NB 50 Klüberpaste ME 31-52	Mobilux EP 0 Mobil Greaserex 47		
Wälzlagerfett Bearing grease Graisse de roulement		K 3 K-20 (Li-verseift)	Aralub HL 3	BP Energrease LS 3	BEACON 3	CENTOPLE X 3	Mobilux 3	Shell Alvania R 3 Alvania G 3	Multifak Premium 3
Öle für Gleitbahnen Oils for slideways Huiles pour glissières	VG 68	CGLP 68	Aral Deganit BWX 68	BP Maccurat D68	ESSO Febis K68	LAMORA D 68	Mobil Vactra Oil No.2	Shell Tonna S2 M 68	Way lubricant X 68
Öle für Hochfrequenzspindeln Oils for Built-in spindles Huiles pour broches à haute vitesse	VG 68		Deol BG 68	Emergol HLP-D68	Spartan EP 68		Drucköl KLP 68-C	Shell Omala 68	
Fett für spezielle Schmierungen an CNC Werkzeugmaschinen (Fließfett) Grease for special lubrication on CNC machine tools Graisse pour lubrification spéciale sur machines-outils CNC	NLGI Klasse 000 NLGI class 000		ARALUB BAB 000	Grease EP 000	Shell Gadus S4 V45AC	CENTOPLE X GLP 500	Mobilux EP 023		Multifak 264 EP 000
Fett für Hochfrequenzspindeln Grease for Built-in spindles Graisse pour broches à haute vitesse	METAFLUX-Fett-Paste (Grease paste) Nr. 70-8508 METAFLUX-Moly-Spray Nr. 70-82 Techno Service GmbH ; Detmolder Strasse 515 ; D-33605 Bielefeld ; (++49) 0521- 924440 ; www.metaflux-ts.de								
Kühlschmiermittel Cooling lubricants Lubrifiants de refroidissement			Aral Emusol	BP Sevora	Esso Kutwell		Mobilcut	Shell Adrana	Chevron Soluble Oil B

8 Malfunctions

Malfunction	Cause/ possible effects	Solution
Noise during work.	- Spindle is too little lubricated - Tool is blunt or wrongly clamped	- Grease spindle - Use new tool and check securing (fixed setting of the bit, bit holder and chuck).
Bit „burnt“	- Drill speed too high /feed too high - Chips do not come out of the drill hole - Drill blunt - No or too little cooling	- Select another speed - Extract drill more often during work - Sharpen or use new drill - Use cooling agent
Drill tip is running off centre, the drilled hole is non-round	- Hard points on the workpiece - Length of the cutting spirals/or angles on the tool are unequal. - Drill deformed	- Use new drill
Drill bit defective.	- No base / support used.	- Use support and clamp it with the workpiece
Drill bit runs unround or wobbles.	- Drill deformed - Worn out spindle bearings - Drill is not correctly clamped. - Drill chuck defective	- Use new drill - Have the spindle bearings replaced - Correctly clamp drill - Replace the drill chuck
It is not possible to insert the drill chuck or the taper mandrel	- Dirt, grease or oil on the taper inside of the drill chuck or on the taper surface of the drill spindle	- Clean surfaces well - Keep surfaces free of grease
Motor does not start	- Motor is wrongly connected - Defective fuse	- Have it checked by authorised personnel
Motor is overheating and there is no power	- Motor overloaded - Too low mains voltage - Motor is wrongly connected	- Reduce feed rate Disconnect immediately and have it checked by authorized personnel - Have it checked by authorised personnel
Precision of the work deficient	- Irregularly heavy or tensed workpiece - Inexact horizontal position of the part holder	- Balance the piece statically and secure without straining - Adjust part-holder
Drilling spindle sleeve does not return to its initial position	- Spindle return spring does not work - Locking bolt inserted	- Check spindle return spring, replace it, if necessary - Pull out locking pin
The drilling sleeve may not be moved downwards.	- Locking bolt inserted - Drill depth adjustment no released	- Pull out locking pin - Release drill depth adjustment
Spindle bearing overheating	- Bearing worn down - Bearing pretension is too high - Working at high drilling speed over a longer period of time.	- Replace - Reduce bearing slack for fixed bearing (conical-roller bearing) - Reduce drill speed and feed rate

Malfunction	Cause/ possible effects	Solution
Working spindle rattling on rough piece surfaces	• Excessive slack in bearing • Working spindle moves up and down • Adjustment strip loose • Clamping chuck is loose • Tool is blunt • Workpiece is loose	• Readjust bearing slack or replace bearing • Readjust bearing clearance (fixed bearing) • Adjust strip to the correct slack using the adjusting screw • Check, re-tighten. • Sharpen or replace tool • Clamp the workpiece firmly.

9 Appendix

9.1 Copyright

This document is copyright. All derived rights are also reserved, especially those of translation, re-printing, use of figures, broadcast, reproduction by photo-mechanical or similar means and recording in data processing systems, neither partial nor total.

Subject to technical changes without notice.

9.2 Terminology/Glossary

Term	Explanation
Drill drift	Tool to release the bit or the drill chuck from the drill spindle
Drill chuck	Drill holding fixture
Drill head	Upper part of the geared drill
Drill sleeve	Fixed hollow shaft in which the drilling spindle turns
Drilling spindle	Shaft activated by the motor
Drilling table	Supporting surface, clamping surface
Taper mandrel	Cone of the drill or of the drill chuck
Spindle sleeve lever	Manual operation for the drill feed
Quick action - drill chuck	Drill chuck can be fixed by hand.
Workpiece	Piece to be drilled or machined.
Tool	Milling cutter, drill bit, countersink, etc.
Locking pin	Bolts for holding the drilling spindle sleeve in a certain height for the removing of the drill chuck or tool.

9.3 Change information operating manual

Chapter	Short note	new version number
3.7, 4.2, 4.6	Chip filter	1.2.6
5	Inspection opening	1.2.7
CE	EC declaration	1.2.8
CE	EMC 2014/30/EU & LVD 2014/35/EU	1.2.9
2 + 4	Spindle speeds for ~60Hz connection	1.3.0
3	Interdepartmental transport	1.3.1
CE	Update	1.3.2

9.4 Liability claims for defects / warranty

Beside the legal liability claims for defects of the customer towards the seller the manufacturer of the product, OPTIMUM GmbH, Robert-Pfleger-Straße 26, D-96103 Hallstadt, does not grant any further warranties unless they are listed below or had been promised in the frame of a single contractual agreement.

- The processing of the liability claims or of the warranty is performed as chosen by OPTIMUM GmbH either directly or through one of its dealers.
  Any defective products or components of such products will either be repaired or replaced by components which are free from defects. The property of replaced products or components passes on to OPTIMUM Maschinen Germany GmbH.
- The automatically generated original proof of purchase which shows the date of purchase, the type of machine and the serial number, if applicable, is the precondition in order to assert liability or warranty claims. If the original proof of purchase is not presented, we are not able to perform any services.
- Defects resulting of the following circumstances are excluded from liability and warranty claims:
  - Using the product beyond the technical options and proper use, in particular due to overstraining of the machine.
  - Any defects arising by one's own fault due to faulty operations or if the operating manual is disregarded.
  - Inattentive or incorrect handling and use of improper equipment.
  - Non-authorized modifications and repairs.
  - Insufficient installation and safeguarding of the machine
  - Disregarding the installation requirements and conditions of use.
  - Atmospheric discharges, overvoltage and lightning strokes as well as chemical influences.
- The following items are as well not subject to the liability or warranty claims:
  - Wearing parts and components which are subject to a standard wear as intended such as e.g. V-belts, ball bearings, illuminants, filters, sealings, etc.
  - Non reproducible software errors
- Any services which OPTIMUM GmbH or one of its agents performs in order to fulfill in the frame of an additional guarantee are neither an acceptance of the defects nor an acceptance of its obligation to compensate. Such services do neither delay nor interrupt the warranty period.
- Place of jurisdiction among traders is Bamberg.
- If one of the above mentioned agreements is totally or partially inefficient and/or null, it is considered as agreed what is closest to the will of the warrantor and which remains in the framework of the limits of liability and warranty which are predefined by this contract.

9.5 Storage

ATTENTION!

In case of wrong and improper storage electrical and mechanical machine components might get damaged and destroyed.

Store packed and unpacked parts only under the intended environmental conditions.

Follow the instructions and information on the transport case:

- Fragile goods
  (Goods require careful handling)

- Protect against moisture and humid environment

► Environmental conditions on page 18

- Prescribed position of the packing case
  (Marking of the top surface - arrows pointing to the top)

- Maximum stacking height

  Example: not stackable - do not stack a second packing case
  on top of the first one.

Consult Optimum Maschinen Germany GmbH if the machine and accessories are stored for more than three months or are stored under different environmental conditions than those given here.

9.6 Note regarding disposal / options to reuse:

Please dispose of your device environmentally friendly by disposing of scrap in a professional way.

Please neither throw away the packaging nor the used machine later on, but dispose of them according to the guidelines established by your city council/municipality or by the corresponding waste management enterprise.

9.6.1 Decommissioning

CAUTION!

Used devices need to be decommissioned in a professional way in order to avoid later misuses and endangerment of the environment or persons.

- Dsconnect the plug from the power supply.
- Cut the connection cable.
- Remove all environmentally hazardous operating fluids from the used device.
- If applicable remove batteries and accumulators.
- Disassemble the machine if required into easy-to-handle and reusable assemblies and component parts.
- Supply the machine components and operating fluids to the provided disposal routes.

9.6.2 Disposal of the packaging of new devices

All used packaging materials and packaging aids of the machine are recyclable and generally need to be supplied to the material reuse.

The packaging wood can be supplied to the disposal or the reuse.

Any packaging components made of cardboard box can be chopped up and supplied to the waste paper collection.

The films are made of polyethylene (PE) and the cushion parts are made of polystyrene (PS). These materials can be reused after reconditioning if they are forwarded to a collection station or to the appropriate waste management enterprise.

Only forward the packaging materials correctly sorted to allow a direct reuse.

9.6.3 Disposing of the old device

INFORMATION

Please make sure in your own interest and in the interest of the environment that all component parts of the machine will be disposed of in the provided and admitted ways.

Please note that the electrical devices include lots of reusable materials as well as environmentally hazardous components. Account for separate and professional disposal of the component parts. In case of doubt, please contact your municipal waste management. If appropriate, call on the help of a specialist waste disposal company for the treatment of the material.

9.6.4 Disposal of electrical and electronic components

Please make sure that electrical components are disposed of in a professional way according to the legal requirements.

The device includes electric and electronic components and must not be disposed of with the rubbish. According to the European directive regarding electrical and electronic used devices and the execution of national rights used electrical tools and electrical machines need to be collected separately and be supplied to an environmentally compatible reuse.

Being the machine operator you should obtain information regarding the authorized collection or disposal system which applies for your company.

Please make sure that the batteries and/or accumulators are disposed of in a professional way according to the legal regulations. Please only throw discharged batteries in the collection boxes in shops or at municipal waste management companies.

9.6.5 Disposal of lubricants and coolants

ATTENTION!

Please imperatively make sure to dispose of the used coolant and lubricants in an environmentally compatible way. Observe the disposal notes of your municipal waste management companies.

INFORMATION

Used coolant emulsions and oils should not be mixed up since it is only possible to reuse used oils which had not been mixed up without pre-treatment.

The disposal notes for the used lubricants are made available by the manufacturer of the lubricants. If necessary, request the product-specific data sheets.

9.7 Disposal via municipal collection

Disposal of used electric and electronic machines
(Applicable in the countries of the European Union and other European countries with a separate collecting system for those devices).

The sign on the product or on its packing indicates that the product must not be handles as common household waist, but that is needs to be delivered to a central collection point for recycling. Your contribution to the correct disposal of this product will protect the environment and the health of your fellow men. The environment and the health are endangered by incorrect disposal. Recycling of material will help to reduce the consumption of raw materials. Your District Office, the municipal waste collection station or the shop where you have bought the product will inform you about the recycling of this product.

9.8 Product follow-up

We are required to perform a follow-up service for our products which extends beyond shipment.

We would be grateful if you could send us the following information:

- Modified settings
- Any experiences with the geared drill which might be important for other users
- Recurring failures

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OPTIMUM®
MASCHINEN - GERMANY

EC - Declaration of Conformity

according to Machinery Regulation 2023/1230 Annex V Part A

The manufacturer / distributor	Optimum Maschinen Germany GmbH Dr.-Robert-Pfleger-Str. 26 D - 96103 Hallstadt, Germany

hereby declares that the following product

Product designation:	Drilling machine
Type designation:	B40GSM

fulfils all the relevant provisions of the Machinery Regulation specified above and the additionally applied directives (in the following) - including the changes which applied at the time of the declaration.

Description:

Hand-controlled drilling machine.

The following additional EU directives have been applied:

EMC Directive 2014/30/EU ; Restriction of the use of certain hazardous substances in electrical and electronic equipment 2015/863/EU

The following harmonized standards were applied:

EN 12717: 2009-07 Machine tools - Safety - Drilling machines

EN 60204-1: 2019-06 Safety of machinery - Electrical equipment of machines - Part 1: General requirements

EN 13849-1: 2016-06 Safety of machinery - Safety related parts of controls - Part 1: General design principles

EN 13849-2: 2013-02 Safety of machinery - Safety related parts of controls - Part 2: Validation

EN ISO 12100: 2011-03 Safety of machinery - General principles for design - Risk assessment and risk reduction

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Hallstadt, 2023-11-07

Index

A
Accident report 16
C
Classification of hazards 6
Customer service 42
Customer service technician 42
Cutting speeds 34
D
Disinfection
  Cooling lubricant tank 43
Disposal 75
Drill chuck
  assembly 31
  disassembly 30
Drilling capacity 17
Drilling table 17
E
EC - declaration of conformity 76
Electrical connection 24
Electrical system
  safety 16
Environmental conditions 18
F
Floor loading 18
I
Inspection 39
Installation plan 19
Intended use 7
Interdepartmental transport 20
L
Lubrication 24
M
Maintenance 38, 39
Malfunctions 69
Misuse 7
O
Obligations
  of the operating company 10
  of the operator 10
Operating material 18
Operator positions 11
operator's log 38
P
Pictograms 6
Q
Qualification of the staff
  Safety 9
R
Refilling oil 24
S
Safety
  devices 11
  during maintenance 15
  during operation 15
Safety instructions 6
Service Hotline 45
Specialist dealer 42
Speeds 17
Spindle seat 17
Storage and packaging 21
T
Technical data
  drilling capacity 17
  drilling table 17
  Emissions 18
  Environmental conditions 18
  floor loading 18
  operating material 18
  Speeds 17
  Spindle seat 17
Technical Details
  Working area 17
Tool
  disassembly 30, 31
Transport 20
W
Warming up the machine 24
Warning notes 6
Working area 17